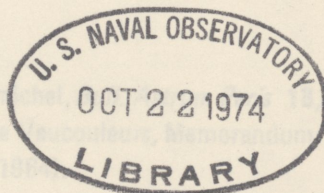


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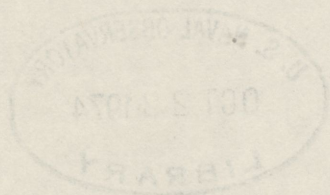
U. S. Naval Observatory, Washington, D. C. 20390

July 31, 1974



PHYSICAL EPHEMERIS OF MARS

Victoria Meiller



PHYSICAL EPHEMERIS OF MARS

This *Circular* contains an ephemeris for physical observations of Mars for periods of sixty days centered about each opposition from 1779 to 1875 and the oppositions of 1659, 1666, 1672, 1683, 1704 and 1719. It has been produced in order to provide a systematic ephemeris over this period with which observations may be compared.

The adopted rotation elements are:

North pole (Average of determinations by Camichel, *Bull. Astron. Paris* 18, 83, 1954 and Burton, *A. J.*, 39, 163, 1929. See de Vaucouleurs, Memorandum RM-3999-NASA, RAND Corporation, Jan. 1964).

At the beginning of the year t

$$\alpha_0 = 316^\circ 55 + 0.006750 (t - 1905.0)$$

$$\delta_0 = +52^\circ 85 + 0.003479 (t - 1905.0)$$

Sidereal period of rotation (Ashbrook, *A. J.*, 58, 145, 1953).

In ephemeris time, $24^h 37^m 22^s 6689$

Central meridian, referred to the zero meridian of 1909.

Longitude of central meridian

1909 January 15.0 G.M.A.T. (J. D. 241 8322.0), $344^\circ 41$

Daily motion, 350.891962

The longitude of the central meridian is given by $V - A_E$ where V is the Martian hour angle of the vernal equinox of Mars measured from the zero meridian. In order to preserve the zero point of the longitude system ($344^\circ 41$ on J. D. 241 8322.0) with the adopted elements, the value of V for the epoch 1909 January 15.0 G.M.A.T. is $149^\circ 479$.

The positions of Mars used in the computation of the ephemeris are based on the theory by G. M. Clemence. (*Astr. Pap. Amer. Eph.*, XI, Pt. II, 1949 and *Astr. Pap. Amer. Eph.*, XVI, Pt. II, 1961.) The independent argument is Ephemeris Time.

PHYSICAL EPHEMERIS OF MARS, 1659

Julian Day	Light-time m	Diameter "	$A_S + 180^\circ$ °	D_E °	$A_S - A_E$ °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian	
										h	m
2327300.5	4.99	15.61	178.12	- 0.32	-23.84	-11.31	332.06	328.98	277.44	5	38.8
2327301.5	4.95	15.71	178.05	- 0.40	-23.25	-11.10	332.60	328.93	268.41	6	15.8
2327302.5	4.92	15.81	177.96	- 0.50	-22.66	-10.90	333.15	328.88	259.39	6	52.7
2327303.5	4.89	15.91	177.86	- 0.60	-22.05	-10.69	333.69	328.82	250.39	7	29.7
2327304.5	4.86	16.01	177.75	- 0.71	-21.43	-10.49	334.23	328.76	241.40	8	06.5
2327305.5	4.83	16.10	177.62	- 0.83	-20.80	-10.28	334.76	328.68	232.43	8	43.3
2327306.5	4.81	16.19	177.49	- 0.95	-20.16	-10.07	335.30	328.61	223.46	9	20.1
2327307.5	4.78	16.28	177.34	- 1.08	-19.51	- 9.86	335.84	328.52	214.51	9	56.8
2327308.5	4.76	16.37	177.17	- 1.22	-18.84	- 9.66	336.37	328.43	205.57	10	33.4
2327309.5	4.73	16.45	177.00	- 1.36	-18.17	- 9.45	336.91	328.34	196.64	11	10.0
2327310.5	4.71	16.53	176.81	- 1.51	-17.48	- 9.24	337.44	328.24	187.73	11	46.6
2327311.5	4.69	16.60	176.61	- 1.66	-16.79	- 9.03	337.98	328.13	178.82	12	23.1
2327312.5	4.67	16.67	176.40	- 1.82	-16.08	- 8.82	338.51	328.02	169.93	12	59.5
2327313.5	4.65	16.74	176.18	- 1.99	-15.37	- 8.61	339.04	327.91	161.05	13	35.9
2327314.5	4.63	16.80	175.95	- 2.16	-14.64	- 8.40	339.57	327.79	152.18	14	12.3
2327315.5	4.62	16.86	175.71	- 2.34	-13.91	- 8.19	340.10	327.67	143.32	14	48.6
2327316.5	4.60	16.92	175.45	- 2.52	-13.16	- 7.98	340.63	327.54	134.47	15	24.8
2327317.5	4.59	16.96	175.19	- 2.70	-12.41	- 7.77	341.15	327.41	125.62	16	01.1
2327318.5	4.58	17.01	174.92	- 2.89	-11.65	- 7.56	341.68	327.27	116.79	16	37.3
2327319.5	4.57	17.05	174.64	- 3.09	-10.89	- 7.35	342.21	327.14	107.97	17	13.5
2327320.5	4.56	17.08	174.35	- 3.28	-10.12	- 7.14	342.73	327.00	99.15	17	49.6
2327321.5	4.55	17.10	174.05	- 3.48	- 9.34	- 6.93	343.25	326.86	90.34	18	25.7
2327322.5	4.55	17.12	173.75	- 3.68	- 8.56	- 6.71	343.78	326.71	81.53	19	01.8
2327323.5	4.54	17.14	173.45	- 3.89	- 7.77	- 6.50	344.30	326.57	72.73	19	37.8
2327324.5	4.54	17.15	173.13	- 4.09	- 6.98	- 6.29	344.82	326.42	63.94	20	13.9
2327325.5	4.54	17.15	172.82	- 4.30	- 6.18	- 6.08	345.34	326.28	55.15	20	49.9
2327326.5	4.54	17.15	172.49	- 4.51	- 5.38	- 5.87	345.86	326.13	46.36	21	25.9
2327327.5	4.54	17.14	172.17	- 4.72	- 4.58	- 5.66	346.38	325.99	37.58	22	01.9
2327328.5	4.55	17.12	171.84	- 4.93	- 3.78	- 5.44	346.90	325.84	28.79	22	37.9
2327329.5	4.55	17.10	171.51	- 5.13	- 2.98	- 5.23	347.41	325.70	20.01	23	13.9
2327330.5	4.56	17.07	171.18	- 5.34	- 2.18	- 5.02	347.93	325.56	11.23	23	49.9
2327331.5	4.57	17.04	170.85	- 5.55	- 1.37	- 4.81	348.44	325.42	2.45	••	••
2327332.5	4.58	16.99	170.52	- 5.75	- 0.57	- 4.60	348.96	325.28	353.67	0	25.9
2327333.5	4.59	16.95	170.19	- 5.96	+ 0.22	- 4.39	349.47	325.14	344.89	1	02.0
2327334.5	4.61	16.89	169.87	- 6.16	+ 1.02	- 4.17	349.98	325.00	336.11	1	38.0
2327335.5	4.62	16.84	169.54	- 6.36	+ 1.81	- 3.96	350.50	324.87	327.32	2	14.0
2327336.5	4.64	16.77	169.22	- 6.55	+ 2.60	- 3.75	351.01	324.74	318.53	2	50.0
2327337.5	4.66	16.70	168.90	- 6.74	+ 3.38	- 3.54	351.52	324.62	309.73	3	26.1
2327338.5	4.68	16.63	168.59	- 6.93	+ 4.16	- 3.33	352.03	324.49	300.93	4	02.2
2327339.5	4.70	16.55	168.28	- 7.11	+ 4.93	- 3.12	352.53	324.37	292.13	4	38.3
2327340.5	4.73	16.46	167.98	- 7.29	+ 5.69	- 2.91	353.04	324.26	283.32	5	14.4
2327341.5	4.76	16.37	167.68	- 7.47	+ 6.45	- 2.70	353.55	324.15	274.50	5	50.6
2327342.5	4.78	16.27	167.40	- 7.64	+ 7.20	- 2.49	354.05	324.04	265.67	6	26.8
2327343.5	4.81	16.18	167.11	- 7.80	+ 7.94	- 2.27	354.56	323.94	256.84	7	03.0
2327344.5	4.84	16.07	166.84	- 7.96	+ 8.67	- 2.06	355.06	323.84	247.99	7	39.3
2327345.5	4.88	15.96	166.58	- 8.11	+ 9.39	- 1.85	355.57	323.74	239.14	8	15.6
2327346.5	4.91	15.85	166.32	- 8.26	+10.11	- 1.64	356.07	323.65	230.28	8	52.0
2327347.5	4.95	15.74	166.08	- 8.40	+10.81	- 1.44	356.57	323.57	221.41	9	28.4
2327348.5	4.98	15.62	165.84	- 8.53	+11.50	- 1.23	357.07	323.48	212.53	10	04.8
2327349.5	5.02	15.50	165.62	- 8.66	+12.18	- 1.02	357.57	323.41	203.63	10	41.3
2327350.5	5.06	15.38	165.40	- 8.78	+12.84	- 0.81	358.07	323.33	194.73	11	17.9
2327351.5	5.10	15.25	165.20	- 8.90	+13.50	- 0.60	358.57	323.27	185.82	11	54.5
2327352.5	5.15	15.13	165.01	- 9.00	+14.14	- 0.39	359.07	323.20	176.89	12	31.1
2327353.5	5.19	15.00	164.83	- 9.10	+14.77	- 0.18	359.56	323.14	167.95	13	07.8
2327354.5	5.24	14.87	164.66	- 9.20	+15.39	+ 0.02	0.06	323.09	159.00	13	44.5
2327355.5	5.28	14.74	164.50	- 9.28	+16.00	+ 0.23	0.55	323.04	150.04	14	21.3
2327356.5	5.33	14.60	164.36	- 9.36	+16.59	+ 0.44	1.05	322.99	141.06	14	58.2
2327357.5	5.38	14.47	164.22	- 9.44	+17.18	+ 0.65	1.54	322.95	132.07	15	35.1
2327358.5	5.43	14.33	164.10	- 9.50	+17.74	+ 0.85	2.04	322.91	123.08	16	12.0
2327359.5	5.48	14.20	164.00	- 9.56	+18.30	+ 1.06	2.53	322.88	114.06	16	49.0
2327360.5	5.54	14.06	163.90	- 9.62	+18.84	+ 1.26	3.02	322.85	105.04	17	26.1

PHYSICAL EPHEMERIS OF MARS, 1666

5

Julian Day	Light-time	Diameter	A_R+180°	D_S	A_S-A_R	D_S	L_S	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2329600.5	6.43	12.10	287.39	+21.39	-24.08	+24.59	83.91	31.90	99.33	17 49.4
2329601.5	6.38	12.20	287.27	+21.39	-23.48	+24.61	84.35	31.86	90.35	18 26.2
2329602.5	6.32	12.31	287.14	+21.40	-22.87	+24.63	84.79	31.81	81.38	19 02.9
2329603.5	6.27	12.41	287.00	+21.40	-22.24	+24.65	85.23	31.76	72.43	19 39.6
2329604.5	6.22	12.52	286.84	+21.41	-21.60	+24.67	85.67	31.70	63.49	20 16.2
2329605.5	6.17	12.62	286.67	+21.42	-20.95	+24.68	86.11	31.63	54.57	20 52.7
2329606.5	6.12	12.72	286.49	+21.44	-20.28	+24.69	86.56	31.56	45.65	21 29.2
2329607.5	6.07	12.82	286.29	+21.45	-19.60	+24.70	87.00	31.49	36.76	22 05.7
2329608.5	6.03	12.92	286.08	+21.47	-18.90	+24.71	87.44	31.41	27.87	22 42.1
2329609.5	5.98	13.02	285.85	+21.49	-18.19	+24.72	87.88	31.32	19.00	23 18.4
2329610.5	5.94	13.11	285.62	+21.51	-17.47	+24.73	88.32	31.23	10.14	23 54.7
2329611.5	5.89	13.21	285.37	+21.54	-16.73	+24.73	88.76	31.14	1.29	.. .. .
2329612.5	5.85	13.30	285.10	+21.56	-15.98	+24.74	89.21	31.04	352.45	0 30.9
2329613.5	5.81	13.39	284.83	+21.59	-15.22	+24.74	89.65	30.93	343.63	1 07.1
2329614.5	5.78	13.48	284.54	+21.62	-14.44	+24.74	90.09	30.82	334.82	1 43.2
2329615.5	5.74	13.56	284.24	+21.66	-13.65	+24.74	90.53	30.70	326.02	2 19.3
2329616.5	5.71	13.64	283.93	+21.69	-12.85	+24.74	90.98	30.58	317.23	2 55.3
2329617.5	5.67	13.72	283.61	+21.73	-12.04	+24.73	91.42	30.45	308.46	3 31.3
2329618.5	5.64	13.80	283.27	+21.77	-11.22	+24.73	91.86	30.31	299.69	4 07.3
2329619.5	5.61	13.87	282.93	+21.81	-10.39	+24.72	92.31	30.18	290.93	4 43.2
2329620.5	5.58	13.94	282.58	+21.85	- 9.55	+24.71	92.75	30.03	282.18	5 19.0
2329621.5	5.56	14.01	282.22	+21.89	- 8.70	+24.70	93.20	29.89	273.44	5 54.8
2329622.5	5.53	14.07	281.85	+21.94	- 7.84	+24.69	93.64	29.73	264.71	6 30.6
2329623.5	5.51	14.13	281.47	+21.98	- 6.97	+24.67	94.09	29.58	255.99	7 06.4
2329624.5	5.49	14.18	281.08	+22.03	- 6.09	+24.66	94.53	29.42	247.27	7 42.1
2329625.5	5.47	14.23	280.69	+22.08	- 5.21	+24.64	94.98	29.25	238.56	8 17.8
2329626.5	5.45	14.28	280.29	+22.13	- 4.32	+24.62	95.42	29.09	229.85	8 53.5
2329627.5	5.44	14.32	279.89	+22.18	- 3.43	+24.60	95.87	28.91	221.15	9 29.2
2329628.5	5.42	14.36	279.48	+22.23	- 2.53	+24.58	96.32	28.74	212.45	10 04.8
2329629.5	5.41	14.39	279.07	+22.28	- 1.63	+24.56	96.76	28.56	203.76	10 40.4
2329630.5	5.40	14.42	278.66	+22.33	- 0.73	+24.53	97.21	28.38	195.07	11 16.1
2329631.5	5.39	14.44	278.24	+22.38	+ 0.18	+24.51	97.66	28.20	186.38	11 51.7
2329632.5	5.38	14.46	277.83	+22.44	+ 1.09	+24.48	98.11	28.02	177.69	12 27.3
2329633.5	5.38	14.47	277.41	+22.49	+ 2.00	+24.45	98.56	27.83	169.00	13 02.9
2329634.5	5.38	14.48	276.99	+22.54	+ 2.91	+24.42	99.00	27.65	160.31	13 38.5
2329635.5	5.38	14.48	276.58	+22.60	+ 3.81	+24.38	99.45	27.46	151.61	14 14.2
2329636.5	5.38	14.48	276.16	+22.65	+ 4.72	+24.35	99.90	27.28	142.92	14 49.8
2329637.5	5.38	14.48	275.75	+22.70	+ 5.62	+24.31	100.35	27.09	134.22	15 25.5
2329638.5	5.38	14.47	275.34	+22.75	+ 6.52	+24.27	100.80	26.90	125.52	16 01.1
2329639.5	5.39	14.45	274.93	+22.81	+ 7.42	+24.23	101.25	26.71	116.82	16 36.8
2329640.5	5.39	14.43	274.53	+22.86	+ 8.31	+24.19	101.70	26.53	108.11	17 12.6
2329641.5	5.40	14.41	274.14	+22.91	+ 9.20	+24.15	102.15	26.35	99.39	17 48.3
2329642.5	5.41	14.38	273.75	+22.96	+10.08	+24.11	102.61	26.16	90.67	18 24.1
2329643.5	5.43	14.34	273.37	+23.02	+10.96	+24.06	103.06	25.98	81.94	18 59.9
2329644.5	5.44	14.31	273.00	+23.07	+11.82	+24.01	103.51	25.81	73.21	19 35.7
2329645.5	5.46	14.27	272.63	+23.12	+12.68	+23.96	103.96	25.63	64.46	20 11.6
2329646.5	5.47	14.22	272.27	+23.17	+13.53	+23.91	104.42	25.46	55.70	20 47.6
2329647.5	5.49	14.17	271.93	+23.22	+14.37	+23.86	104.87	25.30	46.94	21 23.5
2329648.5	5.51	14.12	271.59	+23.27	+15.20	+23.81	105.33	25.13	38.16	21 59.6
2329649.5	5.54	14.06	271.26	+23.32	+16.02	+23.75	105.78	24.97	29.37	22 35.6
2329650.5	5.56	14.00	270.95	+23.37	+16.83	+23.69	106.23	24.82	20.57	23 11.8
2329651.5	5.58	13.94	270.65	+23.42	+17.62	+23.63	106.69	24.67	11.76	23 47.9
2329652.5	5.61	13.87	270.36	+23.46	+18.41	+23.57	107.15	24.53	2.94	.. .. .
2329653.5	5.64	13.80	270.08	+23.51	+19.18	+23.51	107.60	24.39	354.10	0 24.2
2329654.5	5.67	13.73	269.81	+23.56	+19.94	+23.45	108.06	24.26	345.25	1 00.5
2329655.5	5.70	13.66	269.56	+23.61	+20.68	+23.38	108.52	24.13	336.39	1 36.8
2329656.5	5.73	13.58	269.32	+23.65	+21.42	+23.31	108.97	24.01	327.51	2 13.2
2329657.5	5.76	13.51	269.09	+23.70	+22.13	+23.25	109.43	23.90	318.62	2 49.7
2329658.5	5.80	13.43	268.88	+23.75	+22.84	+23.18	109.89	23.79	309.72	3 26.2
2329659.5	5.83	13.34	268.69	+23.79	+23.53	+23.10	110.35	23.69	300.80	4 02.8
2329660.5	5.87	13.26	268.50	+23.84	+24.21	+23.03	110.81	23.60	291.87	4 39.5

PHYSICAL EPHEMERIS OF MARS, 1672

Julian Day	Light-time	Diameter	$A_s + 180^\circ$	D_s	$A_s - A_z$	D_s	L_s	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2331970.5	3.46	22.53	91.37	-20.23	-24.51	-22.96	248.78	334.81	310.02	3 25.1
2331971.5	3.43	22.68	91.30	-20.21	-23.76	-23.07	249.42	334.84	300.99	4 02.1
2331972.5	3.41	22.83	91.21	-20.19	-22.99	-23.17	250.05	334.88	291.98	4 39.1
2331973.5	3.39	22.98	91.11	-20.17	-22.21	-23.26	250.69	334.93	282.97	5 16.0
2331974.5	3.37	23.12	90.99	-20.15	-21.41	-23.36	251.32	334.98	273.99	5 52.8
2331975.5	3.35	23.26	90.86	-20.14	-20.59	-23.45	251.96	335.04	265.01	6 29.6
2331976.5	3.33	23.39	90.72	-20.12	-19.77	-23.54	252.59	335.11	256.05	7 06.4
2331977.5	3.31	23.52	90.56	-20.11	-18.92	-23.62	253.23	335.18	247.11	7 43.1
2331978.5	3.29	23.64	90.39	-20.11	-18.07	-23.71	253.86	335.26	238.17	8 19.7
2331979.5	3.28	23.75	90.21	-20.10	-17.20	-23.78	254.49	335.35	229.25	8 56.3
2331980.5	3.26	23.86	90.02	-20.10	-16.32	-23.86	255.13	335.44	220.34	9 32.8
2331981.5	3.25	23.96	89.81	-20.10	-15.42	-23.93	255.76	335.54	211.44	10 09.3
2331982.5	3.24	24.06	89.60	-20.10	-14.52	-24.00	256.40	335.65	202.55	10 45.7
2331983.5	3.22	24.14	89.37	-20.11	-13.60	-24.07	257.03	335.76	193.67	11 22.1
2331984.5	3.21	24.22	89.13	-20.12	-12.67	-24.13	257.66	335.87	184.80	11 58.5
2331985.5	3.20	24.29	88.89	-20.13	-11.74	-24.19	258.30	335.99	175.94	12 34.8
2331986.5	3.20	24.36	88.63	-20.14	-10.79	-24.25	258.93	336.12	167.09	13 11.1
2331987.5	3.19	24.41	88.37	-20.16	-9.84	-24.31	259.56	336.25	158.24	13 47.3
2331988.5	3.18	24.46	88.10	-20.18	-8.88	-24.36	260.19	336.38	149.41	14 23.6
2331989.5	3.18	24.49	87.83	-20.20	-7.91	-24.40	260.83	336.52	140.57	14 59.8
2331990.5	3.17	24.52	87.55	-20.22	-6.94	-24.45	261.46	336.66	131.75	15 35.9
2331991.5	3.17	24.54	87.26	-20.25	-5.96	-24.49	262.09	336.80	122.92	16 12.1
2331992.5	3.17	24.55	86.98	-20.28	-4.98	-24.53	262.72	336.95	114.11	16 48.3
2331993.5	3.17	24.55	86.68	-20.31	-3.99	-24.56	263.35	337.10	105.29	17 24.4
2331994.5	3.17	24.54	86.39	-20.34	-3.01	-24.60	263.98	337.25	96.48	18 00.5
2331995.5	3.17	24.53	86.09	-20.37	-2.02	-24.63	264.62	337.40	87.66	18 36.7
2331996.5	3.18	24.50	85.80	-20.41	-1.03	-24.65	265.25	337.55	78.85	19 12.8
2331997.5	3.18	24.46	85.50	-20.45	-0.04	-24.67	265.88	337.71	70.04	19 48.9
2331998.5	3.19	24.42	85.20	-20.49	+0.95	-24.69	266.51	337.86	61.23	20 25.1
2331999.5	3.19	24.37	84.91	-20.54	+1.94	-24.71	267.13	338.02	52.41	21 01.2
2332000.5	3.20	24.30	84.61	-20.58	+2.92	-24.72	267.76	338.17	43.60	21 37.4
2332001.5	3.21	24.23	84.32	-20.63	+3.91	-24.73	268.39	338.33	34.77	22 13.6
2332002.5	3.22	24.15	84.04	-20.68	+4.88	-24.74	269.02	338.48	25.95	22 49.8
2332003.5	3.24	24.06	83.76	-20.73	+5.86	-24.74	269.65	338.63	17.12	23 26.0
2332004.5	3.25	23.96	83.48	-20.78	+6.82	-24.74	270.28	338.77	8.28	.. ..
2332005.5	3.26	23.86	83.21	-20.84	+7.78	-24.74	270.90	338.92	359.44	0 02.3
2332006.5	3.28	23.74	82.95	-20.89	+8.73	-24.73	271.53	339.06	350.59	0 38.6
2332007.5	3.30	23.62	82.69	-20.95	+9.68	-24.72	272.16	339.20	341.74	1 14.9
2332008.5	3.31	23.49	82.45	-21.01	+10.61	-24.71	272.78	339.33	332.87	1 51.3
2332009.5	3.33	23.36	82.21	-21.07	+11.54	-24.70	273.41	339.46	324.00	2 27.7
2332010.5	3.35	23.22	81.98	-21.14	+12.45	-24.68	274.03	339.59	315.11	3 04.1
2332011.5	3.37	23.07	81.76	-21.20	+13.36	-24.65	274.66	339.71	306.21	3 40.6
2332012.5	3.40	22.92	81.56	-21.27	+14.25	-24.63	275.28	339.83	297.31	4 17.1
2332013.5	3.42	22.76	81.36	-21.33	+15.13	-24.60	275.90	339.93	288.39	4 53.7
2332014.5	3.45	22.59	81.18	-21.40	+16.00	-24.57	276.52	340.04	279.46	5 30.4
2332015.5	3.47	22.42	81.01	-21.47	+16.85	-24.54	277.15	340.13	270.51	6 07.1
2332016.5	3.50	22.25	80.85	-21.54	+17.69	-24.50	277.77	340.22	261.56	6 43.8
2332017.5	3.53	22.07	80.71	-21.61	+18.52	-24.46	278.39	340.31	252.59	7 20.6
2332018.5	3.56	21.89	80.58	-21.69	+19.33	-24.42	279.01	340.38	243.60	7 57.5
2332019.5	3.59	21.70	80.46	-21.76	+20.13	-24.37	279.63	340.45	234.61	8 34.5
2332020.5	3.62	21.52	80.35	-21.84	+20.91	-24.32	280.25	340.51	225.59	9 11.4
2332021.5	3.65	21.33	80.26	-21.91	+21.67	-24.27	280.87	340.57	216.57	9 48.5
2332022.5	3.68	21.13	80.19	-21.99	+22.43	-24.21	281.49	340.61	207.53	10 25.6
2332023.5	3.72	20.94	80.12	-22.07	+23.16	-24.16	282.10	340.65	198.48	11 02.8
2332024.5	3.75	20.74	80.08	-22.15	+23.88	-24.10	282.72	340.68	189.41	11 40.0
2332025.5	3.79	20.54	80.04	-22.23	+24.59	-24.03	283.34	340.70	180.32	12 17.3
2332026.5	3.83	20.34	80.02	-22.30	+25.28	-23.97	283.95	340.72	171.23	12 54.7
2332027.5	3.86	20.14	80.02	-22.38	+25.95	-23.90	284.57	340.73	162.12	13 32.1
2332028.5	3.90	19.94	80.02	-22.46	+26.61	-23.82	285.18	340.73	152.99	14 09.6
2332029.5	3.94	19.74	80.05	-22.55	+27.25	-23.75	285.79	340.72	143.85	14 47.2
2332030.5	3.98	19.54	80.08	-22.63	+27.88	-23.67	286.41	340.71	134.70	15 24.8

PHYSICAL EPHEMERIS OF MARS, 1683

7

Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian	
										h	m
2335835.5	5.95	13.08	310.29	+17.21	-21.42	+23.56	107.25	38.04	167.92	13	08.0
2335836.5	5.90	13.20	310.17	+17.25	-20.81	+23.50	107.70	38.02	158.95	13	44.8
2335837.5	5.84	13.32	310.04	+17.30	-20.18	+23.43	108.16	38.00	149.98	14	21.5
2335838.5	5.79	13.44	309.90	+17.35	-19.54	+23.37	108.62	37.98	141.03	14	58.2
2335839.5	5.74	13.55	309.74	+17.40	-18.89	+23.30	109.08	37.95	132.09	15	34.8
2335840.5	5.70	13.67	309.57	+17.46	-18.23	+23.23	109.53	37.93	123.17	16	11.4
2335841.5	5.65	13.78	309.39	+17.52	-17.55	+23.16	109.99	37.90	114.25	16	47.9
2335842.5	5.60	13.89	309.19	+17.59	-16.87	+23.09	110.45	37.87	105.35	17	24.4
2335843.5	5.56	14.00	308.98	+17.66	-16.17	+23.01	110.91	37.83	96.46	18	00.8
2335844.5	5.52	14.11	308.76	+17.74	-15.45	+22.94	111.37	37.80	87.58	18	37.2
2335845.5	5.47	14.22	308.53	+17.82	-14.73	+22.86	111.83	37.76	78.72	19	13.5
2335846.5	5.43	14.32	308.29	+17.90	-13.99	+22.78	112.29	37.72	69.86	19	49.8
2335847.5	5.40	14.43	308.03	+17.99	-13.24	+22.70	112.76	37.68	61.02	20	26.0
2335848.5	5.36	14.53	307.77	+18.08	-12.48	+22.62	113.22	37.63	52.19	21	02.2
2335849.5	5.32	14.62	307.49	+18.18	-11.71	+22.54	113.68	37.58	43.36	21	38.3
2335850.5	5.29	14.72	307.20	+18.28	-10.93	+22.45	114.14	37.53	34.55	22	14.4
2335851.5	5.26	14.81	306.90	+18.38	-10.14	+22.37	114.61	37.48	25.75	22	50.5
2335852.5	5.23	14.89	306.60	+18.48	- 9.34	+22.28	115.07	37.42	16.96	23	26.5
2335853.5	5.20	14.98	306.28	+18.59	- 8.53	+22.19	115.54	37.36	8.17	..	..
2335854.5	5.17	15.06	305.95	+18.70	- 7.72	+22.10	116.00	37.30	359.40	0	02.5
2335855.5	5.14	15.13	305.62	+18.82	- 6.89	+22.00	116.47	37.23	350.63	0	38.4
2335856.5	5.12	15.21	305.28	+18.94	- 6.06	+21.91	116.93	37.16	341.87	1	14.3
2335857.5	5.10	15.27	304.93	+19.05	- 5.22	+21.81	117.40	37.09	333.11	1	50.2
2335858.5	5.08	15.34	304.58	+19.18	- 4.37	+21.72	117.87	37.02	324.36	2	26.1
2335859.5	5.06	15.39	304.22	+19.30	- 3.52	+21.62	118.34	36.94	315.62	3	01.9
2335860.5	5.04	15.45	303.85	+19.42	- 2.66	+21.52	118.80	36.86	306.88	3	37.8
2335861.5	5.02	15.50	303.48	+19.55	- 1.80	+21.41	119.27	36.78	298.15	4	13.6
2335862.5	5.01	15.54	303.11	+19.67	- 0.93	+21.31	119.74	36.70	289.42	4	49.3
2335863.5	5.00	15.58	302.73	+19.80	- 0.06	+21.20	120.21	36.61	280.69	5	25.1
2335864.5	4.99	15.61	302.35	+19.93	+ 0.81	+21.10	120.69	36.53	271.96	6	00.9
2335865.5	4.98	15.64	301.97	+20.06	+ 1.68	+20.99	121.16	36.44	263.24	6	36.7
2335866.5	4.97	15.67	301.59	+20.19	+ 2.55	+20.88	121.63	36.34	254.51	7	12.4
2335867.5	4.96	15.68	301.21	+20.31	+ 3.42	+20.77	122.10	36.25	245.79	7	48.2
2335868.5	4.96	15.70	300.83	+20.44	+ 4.30	+20.65	122.58	36.16	237.06	8	24.0
2335869.5	4.96	15.70	300.45	+20.57	+ 5.17	+20.54	123.05	36.06	228.33	8	59.8
2335870.5	4.96	15.71	300.07	+20.70	+ 6.04	+20.42	123.52	35.97	219.60	9	35.5
2335871.5	4.96	15.70	299.70	+20.82	+ 6.90	+20.30	124.00	35.87	210.87	10	11.4
2335872.5	4.96	15.70	299.32	+20.95	+ 7.77	+20.18	124.48	35.77	202.13	10	47.2
2335873.5	4.96	15.68	298.96	+21.07	+ 8.62	+20.06	124.95	35.67	193.39	11	23.0
2335874.5	4.97	15.67	298.59	+21.20	+ 9.48	+19.94	125.43	35.58	184.64	11	58.9
2335875.5	4.98	15.64	298.24	+21.32	+10.33	+19.82	125.91	35.48	175.89	12	34.8
2335876.5	4.99	15.61	297.89	+21.44	+11.17	+19.69	126.39	35.38	167.13	13	10.7
2335877.5	5.00	15.58	297.55	+21.55	+12.00	+19.56	126.86	35.29	158.36	13	46.7
2335878.5	5.01	15.54	297.21	+21.67	+12.83	+19.43	127.34	35.19	149.59	14	22.7
2335879.5	5.02	15.50	296.88	+21.78	+13.64	+19.30	127.83	35.10	140.80	14	58.7
2335880.5	5.04	15.46	296.57	+21.89	+14.45	+19.17	128.31	35.00	132.01	15	34.8
2335881.5	5.05	15.41	296.26	+22.00	+15.25	+19.04	128.79	34.91	123.20	16	11.0
2335882.5	5.07	15.35	295.96	+22.10	+16.04	+18.91	129.27	34.83	114.39	16	47.1
2335883.5	5.09	15.29	295.67	+22.21	+16.81	+18.77	129.75	34.74	105.56	17	23.4
2335884.5	5.11	15.23	295.40	+22.31	+17.58	+18.63	130.24	34.66	96.73	17	59.6
2335885.5	5.13	15.17	295.14	+22.40	+18.33	+18.49	130.72	34.58	87.88	18	36.0
2335886.5	5.16	15.10	294.88	+22.50	+19.07	+18.35	131.21	34.50	79.01	19	12.4
2335887.5	5.18	15.03	294.65	+22.59	+19.80	+18.21	131.69	34.43	70.14	19	48.8
2335888.5	5.21	14.95	294.42	+22.68	+20.52	+18.07	132.18	34.36	61.25	20	25.3
2335889.5	5.23	14.88	294.21	+22.76	+21.22	+17.92	132.67	34.29	52.35	21	01.9
2335890.5	5.26	14.80	294.01	+22.85	+21.91	+17.78	133.16	34.23	43.43	21	38.5
2335891.5	5.29	14.71	293.82	+22.93	+22.58	+17.63	133.65	34.17	34.50	22	15.2
2335892.5	5.32	14.63	293.65	+23.00	+23.24	+17.48	134.14	34.12	25.56	22	51.9
2335893.5	5.35	14.55	293.49	+23.08	+23.89	+17.33	134.63	34.07	16.60	23	28.7
2335894.5	5.38	14.46	293.34	+23.15	+24.53	+17.18	135.12	34.02	7.63	..	..
2335895.5	5.42	14.37	293.21	+23.21	+25.15	+17.02	135.61	33.98	358.65	0	05.5

Julian Day	Light- time m	Diameter "	$A_R + 180^\circ$ °	D_R °	$A_S - A_R$ °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian	
										h	m
2343675.5	3.55	21.92	109.47	-19.34	-24.41	-24.66	265.51	327.38	242.31	8	02.8
2343676.5	3.53	22.05	109.37	-19.36	-23.62	-24.68	266.14	327.41	233.31	8	39.8
2343677.5	3.51	22.18	109.26	-19.37	-22.81	-24.70	266.77	327.45	224.32	9	16.6
2343678.5	3.49	22.31	109.13	-19.40	-21.99	-24.72	267.40	327.49	215.34	9	53.4
2343679.5	3.47	22.43	108.99	-19.43	-21.16	-24.73	268.03	327.54	206.38	10	30.2
2343680.5	3.45	22.55	108.84	-19.46	-20.32	-24.74	268.66	327.60	197.43	11	06.9
2343681.5	3.44	22.66	108.67	-19.49	-19.46	-24.74	269.29	327.66	188.49	11	43.5
2343682.5	3.42	22.77	108.49	-19.53	-18.59	-24.74	269.91	327.72	179.56	12	20.1
2343683.5	3.40	22.87	108.30	-19.58	-17.71	-24.74	270.54	327.79	170.65	12	56.6
2343684.5	3.39	22.96	108.10	-19.62	-16.82	-24.74	271.17	327.86	161.75	13	33.1
2343685.5	3.38	23.05	107.89	-19.67	-15.91	-24.73	271.79	327.93	152.86	14	09.5
2343686.5	3.37	23.13	107.66	-19.73	-15.00	-24.72	272.42	328.02	143.98	14	45.9
2343687.5	3.36	23.20	107.42	-19.79	-14.07	-24.71	273.04	328.10	135.11	15	22.3
2343688.5	3.35	23.27	107.18	-19.85	-13.14	-24.69	273.67	328.19	126.25	15	58.6
2343689.5	3.34	23.32	106.92	-19.91	-12.20	-24.67	274.29	328.28	117.39	16	34.9
2343690.5	3.33	23.38	106.66	-19.98	-11.25	-24.65	274.92	328.38	108.55	17	11.1
2343691.5	3.32	23.42	106.39	-20.05	-10.29	-24.62	275.54	328.48	99.72	17	47.3
2343692.5	3.32	23.45	106.11	-20.12	-9.33	-24.59	276.16	328.59	90.89	18	23.5
2343693.5	3.32	23.48	105.82	-20.20	-8.36	-24.56	276.79	328.69	82.07	18	59.6
2343694.5	3.31	23.50	105.53	-20.28	-7.39	-24.52	277.41	328.80	73.25	19	35.8
2343695.5	3.31	23.51	105.23	-20.36	-6.41	-24.49	278.03	328.92	64.44	20	11.9
2343696.5	3.31	23.51	104.93	-20.45	-5.42	-24.44	278.65	329.03	55.64	20	48.0
2343697.5	3.31	23.50	104.63	-20.53	-4.44	-24.40	279.27	329.15	46.84	21	24.0
2343698.5	3.32	23.48	104.32	-20.62	-3.45	-24.35	279.89	329.27	38.04	22	00.1
2343699.5	3.32	23.46	104.00	-20.71	-2.46	-24.30	280.51	329.39	29.24	22	36.2
2343700.5	3.32	23.42	103.69	-20.80	-1.47	-24.25	281.13	329.52	20.44	23	12.2
2343701.5	3.33	23.38	103.38	-20.89	-0.48	-24.19	281.74	329.64	11.65	23	48.3
2343702.5	3.34	23.32	103.07	-20.99	+0.50	-24.13	282.36	329.77	2.85	..	..
2343703.5	3.35	23.26	102.75	-21.08	+1.48	-24.07	282.98	329.89	354.05	0	24.4
2343704.5	3.36	23.19	102.44	-21.18	+2.46	-24.01	283.59	330.02	345.25	1	00.5
2343705.5	3.37	23.11	102.14	-21.28	+3.44	-23.94	284.21	330.14	336.44	1	36.6
2343706.5	3.38	23.02	101.84	-21.37	+4.41	-23.87	284.82	330.27	327.64	2	12.7
2343707.5	3.40	22.93	101.54	-21.47	+5.37	-23.79	285.44	330.39	318.82	2	48.9
2343708.5	3.41	22.82	101.25	-21.57	+6.33	-23.72	286.05	330.51	310.00	3	25.0
2343709.5	3.43	22.71	100.96	-21.67	+7.28	-23.64	286.66	330.63	301.17	4	01.2
2343710.5	3.45	22.59	100.69	-21.76	+8.22	-23.56	287.27	330.75	292.34	4	37.5
2343711.5	3.46	22.47	100.42	-21.86	+9.15	-23.47	287.89	330.86	283.49	5	13.7
2343712.5	3.49	22.34	100.16	-21.96	+10.06	-23.39	288.50	330.97	274.64	5	50.0
2343713.5	3.51	22.20	99.91	-22.05	+10.97	-23.30	289.11	331.08	265.78	6	26.4
2343714.5	3.53	22.05	99.66	-22.15	+11.87	-23.21	289.71	331.19	256.91	7	02.8
2343715.5	3.55	21.90	99.43	-22.24	+12.75	-23.11	290.32	331.29	248.02	7	39.3
2343716.5	3.58	21.75	99.21	-22.34	+13.62	-23.01	290.93	331.38	239.13	8	15.7
2343717.5	3.61	21.59	99.01	-22.43	+14.48	-22.91	291.54	331.47	230.22	8	52.3
2343718.5	3.63	21.42	98.81	-22.53	+15.33	-22.81	292.14	331.56	221.30	9	28.9
2343719.5	3.66	21.25	98.62	-22.62	+16.16	-22.71	292.75	331.64	212.37	10	05.5
2343720.5	3.69	21.08	98.45	-22.71	+16.97	-22.60	293.35	331.72	203.43	10	42.3
2343721.5	3.72	20.90	98.29	-22.80	+17.78	-22.49	293.96	331.79	194.47	11	19.0
2343722.5	3.76	20.72	98.15	-22.89	+18.56	-22.38	294.56	331.85	185.50	11	55.8
2343723.5	3.79	20.54	98.02	-22.97	+19.33	-22.26	295.16	331.91	176.52	12	32.7
2343724.5	3.82	20.35	97.90	-23.06	+20.09	-22.15	295.76	331.97	167.52	13	09.7
2343725.5	3.86	20.17	97.79	-23.14	+20.83	-22.03	296.36	332.02	158.51	13	46.7
2343726.5	3.90	19.98	97.70	-23.22	+21.56	-21.90	296.96	332.06	149.49	14	23.7
2343727.5	3.93	19.78	97.62	-23.31	+22.26	-21.78	297.56	332.09	140.45	15	00.9
2343728.5	3.97	19.59	97.56	-23.39	+22.96	-21.65	298.16	332.12	131.39	15	38.1
2343729.5	4.01	19.40	97.51	-23.46	+23.63	-21.53	298.76	332.15	122.32	16	15.3
2343730.5	4.05	19.20	97.48	-23.54	+24.29	-21.40	299.35	332.16	113.24	16	52.6
2343731.5	4.10	19.00	97.46	-23.61	+24.93	-21.26	299.95	332.17	104.14	17	30.0
2343732.5	4.14	18.81	97.45	-23.69	+25.56	-21.13	300.54	332.18	95.03	18	07.5
2343733.5	4.18	18.61	97.46	-23.76	+26.17	-20.99	301.14	332.17	85.90	18	45.0
2343734.5	4.23	18.42	97.49	-23.83	+26.76	-20.85	301.73	332.17	76.76	19	22.6
2343735.5	4.27	18.22	97.52	-23.89	+27.34	-20.71	302.32	332.15	67.60	20	00.2

PHYSICAL EPHEMERIS OF MARS, 1719

9

Julian Day	Light- time	Diameter	A_s+180°	D_E	A_s-A_E	D_s	L_s	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2349120.5	3.53	22.03	76.67	-19.81	-26.03	-19.61	233.31	342.34	1.85	.. ..
2349121.5	3.51	22.21	76.66	-19.76	-25.37	-19.78	233.94	342.34	352.76	0 29.7
2349122.5	3.48	22.38	76.63	-19.71	-24.70	-19.94	234.58	342.35	343.68	1 07.0
2349123.5	3.45	22.55	76.59	-19.66	-24.01	-20.10	235.21	342.37	334.62	1 44.1
2349124.5	3.43	22.72	76.54	-19.61	-23.31	-20.26	235.84	342.39	325.57	2 21.3
2349125.5	3.40	22.89	76.47	-19.56	-22.59	-20.42	236.47	342.43	316.54	2 58.3
2349126.5	3.38	23.05	76.39	-19.51	-21.85	-20.58	237.10	342.47	307.51	3 35.3
2349127.5	3.35	23.21	76.30	-19.46	-21.10	-20.73	237.73	342.52	298.51	4 12.3
2349128.5	3.33	23.36	76.19	-19.42	-20.34	-20.88	238.37	342.57	289.51	4 49.2
2349129.5	3.31	23.51	76.07	-19.37	-19.56	-21.03	239.00	342.64	280.53	5 26.0
2349130.5	3.29	23.65	75.94	-19.32	-18.76	-21.17	239.63	342.71	271.56	6 02.8
2349131.5	3.27	23.79	75.79	-19.28	-17.96	-21.31	240.27	342.79	262.60	6 39.5
2349132.5	3.25	23.92	75.63	-19.23	-17.13	-21.45	240.90	342.87	253.66	7 16.2
2349133.5	3.24	24.05	75.46	-19.19	-16.30	-21.59	241.53	342.97	244.73	7 52.8
2349134.5	3.22	24.17	75.28	-19.15	-15.45	-21.72	242.17	343.07	235.80	8 29.4
2349135.5	3.21	24.29	75.08	-19.11	-14.59	-21.86	242.80	343.18	226.89	9 05.9
2349136.5	3.19	24.39	74.88	-19.07	-13.71	-21.99	243.43	343.29	217.99	9 42.4
2349137.5	3.18	24.49	74.66	-19.04	-12.83	-22.11	244.07	343.41	209.11	10 18.8
2349138.5	3.17	24.58	74.44	-19.00	-11.93	-22.24	244.70	343.53	200.22	10 55.2
2349139.5	3.16	24.67	74.20	-18.97	-11.02	-22.36	245.34	343.67	191.35	11 31.6
2349140.5	3.15	24.74	73.96	-18.94	-10.11	-22.48	245.97	343.80	182.49	12 08.0
2349141.5	3.14	24.81	73.71	-18.91	-9.18	-22.59	246.61	343.94	173.63	12 44.3
2349142.5	3.13	24.87	73.46	-18.88	-8.25	-22.70	247.24	344.09	164.78	13 20.5
2349143.5	3.12	24.92	73.19	-18.86	-7.31	-22.81	247.88	344.24	155.94	13 56.8
2349144.5	3.12	24.96	72.93	-18.84	-6.36	-22.92	248.51	344.39	147.10	14 33.0
2349145.5	3.12	24.99	72.66	-18.81	-5.41	-23.03	249.14	344.55	138.26	15 09.3
2349146.5	3.11	25.01	72.38	-18.80	-4.46	-23.13	249.78	344.70	129.43	15 45.5
2349147.5	3.11	25.02	72.10	-18.78	-3.50	-23.23	250.41	344.86	120.60	16 21.7
2349148.5	3.11	25.03	71.82	-18.77	-2.53	-23.32	251.05	345.03	111.77	16 57.9
2349149.5	3.11	25.02	71.54	-18.76	-1.57	-23.41	251.68	345.19	102.94	17 34.1
2349150.5	3.11	25.00	71.26	-18.75	-0.60	-23.50	252.32	345.36	94.12	18 10.3
2349151.5	3.12	24.98	70.98	-18.74	+ 0.36	-23.59	252.95	345.52	85.29	18 46.5
2349152.5	3.12	24.94	70.70	-18.74	+ 1.33	-23.67	253.59	345.69	76.46	19 22.7
2349153.5	3.13	24.90	70.42	-18.74	+ 2.30	-23.75	254.22	345.85	67.63	19 58.9
2349154.5	3.13	24.85	70.14	-18.74	+ 3.26	-23.83	254.85	346.01	58.80	20 35.1
2349155.5	3.14	24.79	69.87	-18.75	+ 4.22	-23.90	255.49	346.18	49.96	21 11.4
2349156.5	3.15	24.72	69.60	-18.76	+ 5.18	-23.98	256.12	346.34	41.12	21 47.6
2349157.5	3.16	24.64	69.33	-18.77	+ 6.14	-24.04	256.76	346.50	32.28	22 23.9
2349158.5	3.17	24.55	69.07	-18.78	+ 7.09	-24.11	257.39	346.65	23.42	23 00.3
2349159.5	3.18	24.45	68.82	-18.80	+ 8.03	-24.17	258.02	346.81	14.57	23 36.6
2349160.5	3.20	24.35	68.57	-18.82	+ 8.97	-24.23	258.66	346.95	5.70	.. ..
2349161.5	3.21	24.24	68.34	-18.84	+ 9.90	-24.29	259.29	347.10	356.83	0 13.0
2349162.5	3.23	24.12	68.10	-18.87	+10.82	-24.34	259.92	347.24	347.95	0 49.4
2349163.5	3.24	23.99	67.88	-18.90	+11.74	-24.39	260.56	347.38	339.06	1 25.9
2349164.5	3.26	23.86	67.67	-18.93	+12.65	-24.43	261.19	347.51	330.16	2 02.4
2349165.5	3.28	23.72	67.46	-18.97	+13.54	-24.48	261.82	347.63	321.25	2 38.9
2349166.5	3.30	23.57	67.27	-19.01	+14.43	-24.52	262.45	347.75	312.33	3 15.5
2349167.5	3.32	23.42	67.09	-19.05	+15.30	-24.55	263.08	347.87	303.40	3 52.2
2349168.5	3.35	23.26	66.92	-19.09	+16.17	-24.59	263.72	347.97	294.46	4 28.9
2349169.5	3.37	23.10	66.76	-19.14	+17.02	-24.62	264.35	348.07	285.50	5 05.6
2349170.5	3.39	22.93	66.61	-19.19	+17.86	-24.64	264.98	348.16	276.54	5 42.4
2349171.5	3.42	22.76	66.48	-19.25	+18.69	-24.67	265.61	348.25	267.56	6 19.3
2349172.5	3.45	22.58	66.36	-19.31	+19.50	-24.69	266.24	348.33	258.56	6 56.2
2349173.5	3.47	22.40	66.25	-19.37	+20.30	-24.71	266.87	348.39	249.56	7 33.1
2349174.5	3.50	22.22	66.15	-19.43	+21.09	-24.72	267.50	348.46	240.54	8 10.2
2349175.5	3.53	22.03	66.07	-19.50	+21.86	-24.73	268.13	348.51	231.50	8 47.2
2349176.5	3.56	21.84	66.01	-19.56	+22.62	-24.74	268.75	348.55	222.45	9 24.4
2349177.5	3.60	21.65	65.95	-19.64	+23.37	-24.74	269.38	348.59	213.39	10 01.6
2349178.5	3.63	21.46	65.91	-19.71	+24.10	-24.74	270.01	348.62	204.31	10 38.9
2349179.5	3.66	21.26	65.89	-19.79	+24.82	-24.74	270.64	348.64	195.22	11 16.2
2349180.5	3.70	21.07	65.87	-19.86	+25.52	-24.74	271.26	348.65	186.12	11 53.6

Julian Day	Light- time m	Diameter "	A_s+180° °	D_R °	A_s-A_R °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2370925.5	5.53	14.09	337.79	+ 8.47	-22.14	+17.86	132.89	37.25	219.47	9 36.7
2370926.5	5.47	14.23	337.76	+ 8.51	-21.63	+17.72	133.38	37.27	210.40	10 13.8
2370927.5	5.42	14.37	337.72	+ 8.56	-21.10	+17.57	133.87	37.28	201.35	10 51.0
2370928.5	5.36	14.52	337.67	+ 8.62	-20.56	+17.42	134.36	37.30	192.30	11 28.1
2370929.5	5.31	14.66	337.61	+ 8.68	-20.01	+17.27	134.85	37.32	183.27	12 05.1
2370930.5	5.26	14.80	337.54	+ 8.75	-19.44	+17.11	135.34	37.34	174.25	12 42.1
2370931.5	5.21	14.94	337.45	+ 8.82	-18.87	+16.96	135.83	37.37	165.24	13 19.0
2370932.5	5.16	15.08	337.35	+ 8.90	-18.28	+16.81	136.32	37.40	156.24	13 55.9
2370933.5	5.11	15.22	337.24	+ 8.99	-17.69	+16.65	136.81	37.43	147.25	14 32.8
2370934.5	5.07	15.36	337.12	+ 9.08	-17.08	+16.49	137.31	37.46	138.28	15 09.5
2370935.5	5.02	15.50	336.99	+ 9.18	-16.46	+16.33	137.80	37.50	129.31	15 46.3
2370936.5	4.98	15.64	336.85	+ 9.28	-15.83	+16.17	138.30	37.53	120.36	16 23.0
2370937.5	4.94	15.77	336.69	+ 9.39	-15.19	+16.01	138.79	37.57	111.41	16 59.7
2370938.5	4.89	15.90	336.53	+ 9.51	-14.53	+15.85	139.29	37.61	102.48	17 36.3
2370939.5	4.85	16.04	336.35	+ 9.63	-13.87	+15.68	139.79	37.66	93.56	18 12.8
2370940.5	4.82	16.16	336.17	+ 9.75	-13.20	+15.52	140.29	37.70	84.64	18 49.3
2370941.5	4.78	16.29	335.97	+ 9.89	-12.51	+15.35	140.78	37.75	75.74	19 25.8
2370942.5	4.74	16.41	335.77	+10.02	-11.82	+15.18	141.28	37.80	66.85	20 02.3
2370943.5	4.71	16.53	335.55	+10.16	-11.11	+15.01	141.79	37.85	57.97	20 38.7
2370944.5	4.68	16.65	335.32	+10.31	-10.40	+14.84	142.29	37.90	49.09	21 15.0
2370945.5	4.64	16.77	335.09	+10.46	- 9.68	+14.67	142.79	37.95	40.23	21 51.4
2370946.5	4.61	16.88	334.84	+10.62	- 8.95	+14.49	143.29	38.00	31.37	22 27.6
2370947.5	4.58	16.98	334.59	+10.78	- 8.21	+14.32	143.80	38.06	22.52	23 03.9
2370948.5	4.56	17.08	334.33	+10.94	- 7.46	+14.14	144.30	38.11	13.68	23 40.1
2370949.5	4.53	17.18	334.06	+11.11	- 6.70	+13.96	144.81	38.17	4.85	.. ..
2370950.5	4.51	17.28	333.79	+11.28	- 5.94	+13.78	145.31	38.22	356.02	0 16.3
2370951.5	4.48	17.36	333.50	+11.45	- 5.17	+13.60	145.82	38.28	347.20	0 52.5
2370952.5	4.46	17.45	333.22	+11.63	- 4.39	+13.42	146.33	38.33	338.39	1 28.6
2370953.5	4.44	17.53	332.92	+11.81	- 3.61	+13.24	146.84	38.39	329.58	2 04.7
2370954.5	4.42	17.60	332.62	+11.99	- 2.82	+13.06	147.35	38.44	320.77	2 40.8
2370955.5	4.41	17.67	332.32	+12.17	- 2.03	+12.87	147.86	38.49	311.98	3 16.9
2370956.5	4.39	17.73	332.01	+12.36	- 1.23	+12.68	148.37	38.54	303.18	3 53.0
2370957.5	4.38	17.79	331.70	+12.55	- 0.43	+12.50	148.88	38.60	294.39	4 29.0
2370958.5	4.36	17.84	331.38	+12.73	+ 0.37	+12.31	149.39	38.65	285.60	5 05.1
2370959.5	4.35	17.88	331.06	+12.92	+ 1.18	+12.12	149.91	38.70	276.81	5 41.1
2370960.5	4.34	17.92	330.75	+13.11	+ 1.98	+11.93	150.42	38.74	268.02	6 17.1
2370961.5	4.34	17.95	330.43	+13.29	+ 2.79	+11.73	150.94	38.79	259.23	6 53.2
2370962.5	4.33	17.98	330.11	+13.48	+ 3.60	+11.54	151.45	38.83	250.45	7 29.2
2370963.5	4.33	18.00	329.79	+13.66	+ 4.41	+11.35	151.97	38.88	241.66	8 05.2
2370964.5	4.32	18.01	329.47	+13.85	+ 5.21	+11.15	152.49	38.92	232.87	8 41.3
2370965.5	4.32	18.02	329.16	+14.03	+ 6.01	+10.95	153.01	38.96	224.07	9 17.3
2370966.5	4.32	18.02	328.85	+14.21	+ 6.81	+10.76	153.53	38.99	215.27	9 53.4
2370967.5	4.32	18.01	328.54	+14.38	+ 7.61	+10.56	154.05	39.03	206.47	10 29.5
2370968.5	4.32	18.00	328.24	+14.56	+ 8.40	+10.36	154.57	39.06	197.66	11 05.6
2370969.5	4.33	17.98	327.95	+14.73	+ 9.19	+10.16	155.09	39.10	188.85	11 41.8
2370970.5	4.33	17.96	327.65	+14.90	+ 9.97	+ 9.95	155.62	39.13	180.03	12 18.0
2370971.5	4.34	17.93	327.37	+15.06	+10.75	+ 9.75	156.14	39.15	171.21	12 54.2
2370972.5	4.35	17.90	327.09	+15.22	+11.51	+ 9.55	156.67	39.18	162.38	13 30.4
2370973.5	4.36	17.86	326.82	+15.38	+12.27	+ 9.34	157.19	39.21	153.54	14 06.7
2370974.5	4.37	17.81	326.56	+15.53	+13.03	+ 9.13	157.72	39.23	144.69	14 43.0
2370975.5	4.38	17.76	326.31	+15.68	+13.77	+ 8.93	158.25	39.25	135.83	15 19.3
2370976.5	4.40	17.71	326.06	+15.82	+14.51	+ 8.72	158.78	39.27	126.96	15 55.7
2370977.5	4.41	17.65	325.83	+15.96	+15.24	+ 8.51	159.31	39.29	118.09	16 32.1
2370978.5	4.43	17.58	325.60	+16.09	+15.95	+ 8.30	159.84	39.31	109.20	17 08.6
2370979.5	4.44	17.52	325.39	+16.22	+16.66	+ 8.09	160.37	39.32	100.30	17 45.2
2370980.5	4.46	17.44	325.18	+16.34	+17.36	+ 7.87	160.90	39.34	91.39	18 21.7
2370981.5	4.48	17.37	324.99	+16.46	+18.04	+ 7.66	161.43	39.35	82.47	18 58.4
2370982.5	4.50	17.29	324.81	+16.57	+18.72	+ 7.45	161.97	39.36	73.54	19 35.0
2370983.5	4.52	17.21	324.64	+16.67	+19.38	+ 7.23	162.50	39.38	64.60	20 11.8
2370984.5	4.55	17.12	324.48	+16.77	+20.04	+ 7.01	163.04	39.39	55.64	20 48.5
2370985.5	4.57	17.03	324.34	+16.87	+20.68	+ 6.80	163.58	39.40	46.67	21 25.4

PHYSICAL EPHEMERIS OF MARS, 1781

11

Julian Day	Light- time	Diameter	A_E+180°	D_E	A_S-A_E	D_S	L_S	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian	
										h	m
2371720.5	4.01	19.42	31.83	-11.31	-22.28	- 4.38	190.50	10.51	124.91	16	04.8
2371721.5	3.97	19.61	31.84	-11.23	-21.75	- 4.62	191.09	10.51	115.80	16	42.1
2371722.5	3.93	19.80	31.84	-11.15	-21.22	- 4.86	191.67	10.52	106.70	17	19.4
2371723.5	3.89	19.99	31.83	-11.06	-20.67	- 5.10	192.25	10.53	97.61	17	56.7
2371724.5	3.86	20.17	31.80	-10.97	-20.11	- 5.34	192.84	10.56	88.54	18	33.9
2371725.5	3.82	20.36	31.77	-10.88	-19.53	- 5.58	193.43	10.59	79.48	19	11.0
2371726.5	3.79	20.54	31.72	-10.78	-18.94	- 5.82	194.02	10.63	70.43	19	48.1
2371727.5	3.76	20.72	31.65	-10.67	-18.34	- 6.06	194.60	10.68	61.39	20	25.2
2371728.5	3.72	20.90	31.58	-10.56	-17.73	- 6.30	195.19	10.73	52.36	21	02.2
2371729.5	3.69	21.08	31.50	-10.45	-17.10	- 6.54	195.78	10.80	43.35	21	39.1
2371730.5	3.66	21.25	31.40	-10.33	-16.46	- 6.78	196.38	10.87	34.34	22	16.0
2371731.5	3.63	21.42	31.29	-10.21	-15.81	- 7.02	196.97	10.95	25.35	22	52.9
2371732.5	3.61	21.59	31.18	-10.09	-15.14	- 7.26	197.56	11.04	16.37	23	29.7
2371733.5	3.58	21.75	31.05	- 9.96	-14.46	- 7.50	198.15	11.13	7.39	..	.. .
2371734.5	3.55	21.91	30.91	- 9.83	-13.77	- 7.73	198.75	11.24	358.43	0	06.4
2371735.5	3.53	22.06	30.76	- 9.69	-13.07	- 7.97	199.34	11.35	349.48	0	43.2
2371736.5	3.51	22.21	30.60	- 9.56	-12.36	- 8.21	199.94	11.46	340.54	1	19.8
2371737.5	3.48	22.35	30.43	- 9.42	-11.64	- 8.45	200.54	11.58	331.60	1	56.5
2371738.5	3.46	22.49	30.25	- 9.28	-10.91	- 8.68	201.14	11.71	322.67	2	33.1
2371739.5	3.44	22.62	30.07	- 9.13	-10.17	- 8.92	201.74	11.85	313.76	3	09.7
2371740.5	3.42	22.74	29.87	- 8.99	- 9.41	- 9.15	202.33	11.99	304.85	3	46.2
2371741.5	3.41	22.86	29.67	- 8.84	- 8.65	- 9.39	202.94	12.13	295.94	4	22.7
2371742.5	3.39	22.97	29.47	- 8.69	- 7.88	- 9.62	203.54	12.28	287.05	4	59.2
2371743.5	3.37	23.08	29.25	- 8.54	- 7.11	- 9.86	204.14	12.43	278.16	5	35.6
2371744.5	3.36	23.17	29.03	- 8.39	- 6.32	-10.09	204.74	12.59	269.27	6	12.1
2371745.5	3.35	23.26	28.80	- 8.25	- 5.53	-10.32	205.35	12.75	260.40	6	48.5
2371746.5	3.33	23.35	28.57	- 8.10	- 4.73	-10.56	205.95	12.92	251.52	7	24.9
2371747.5	3.32	23.42	28.34	- 7.95	- 3.93	-10.79	206.55	13.09	242.65	8	01.2
2371748.5	3.31	23.49	28.10	- 7.80	- 3.12	-11.02	207.16	13.26	233.79	8	37.6
2371749.5	3.31	23.54	27.85	- 7.65	- 2.30	-11.25	207.77	13.43	224.92	9	13.9
2371750.5	3.30	23.59	27.61	- 7.51	- 1.48	-11.48	208.37	13.60	216.06	9	50.3
2371751.5	3.29	23.64	27.36	- 7.36	- 0.66	-11.70	208.98	13.78	207.20	10	26.6
2371752.5	3.29	23.67	27.11	- 7.22	+ 0.17	-11.93	209.59	13.95	198.34	11	02.9
2371753.5	3.29	23.69	26.86	- 7.08	+ 1.00	-12.16	210.20	14.13	189.49	11	39.3
2371754.5	3.28	23.71	26.62	- 6.94	+ 1.82	-12.38	210.81	14.31	180.63	12	15.6
2371755.5	3.28	23.71	26.37	- 6.81	+ 2.65	-12.61	211.42	14.48	171.77	12	51.9
2371756.5	3.28	23.71	26.12	- 6.68	+ 3.49	-12.83	212.03	14.65	162.91	13	28.3
2371757.5	3.28	23.70	25.88	- 6.55	+ 4.31	-13.05	212.65	14.82	154.04	14	04.6
2371758.5	3.29	23.68	25.64	- 6.43	+ 5.14	-13.27	213.26	14.99	145.17	14	41.0
2371759.5	3.29	23.65	25.40	- 6.31	+ 5.97	-13.49	213.87	15.16	136.30	15	17.4
2371760.5	3.30	23.61	25.17	- 6.20	+ 6.79	-13.71	214.49	15.32	127.42	15	53.8
2371761.5	3.30	23.57	24.94	- 6.09	+ 7.61	-13.93	215.10	15.48	118.54	16	30.3
2371762.5	3.31	23.52	24.72	- 5.99	+ 8.43	-14.15	215.72	15.63	109.65	17	06.8
2371763.5	3.32	23.45	24.50	- 5.89	+ 9.24	-14.36	216.34	15.78	100.76	17	43.3
2371764.5	3.33	23.39	24.29	- 5.80	+10.05	-14.58	216.95	15.92	91.86	18	19.8
2371765.5	3.34	23.31	24.09	- 5.71	+10.85	-14.79	217.57	16.06	82.95	18	56.4
2371766.5	3.35	23.23	23.90	- 5.63	+11.64	-15.00	218.19	16.19	74.03	19	33.0
2371767.5	3.36	23.14	23.72	- 5.56	+12.43	-15.21	218.81	16.32	65.10	20	09.6
2371768.5	3.38	23.04	23.54	- 5.49	+13.21	-15.42	219.43	16.43	56.17	20	46.3
2371769.5	3.39	22.94	23.37	- 5.43	+13.98	-15.63	220.05	16.55	47.22	21	23.0
2371770.5	3.41	22.84	23.22	- 5.38	+14.75	-15.83	220.67	16.65	38.27	21	59.8
2371771.5	3.43	22.72	23.07	- 5.33	+15.50	-16.04	221.29	16.75	29.30	22	36.6
2371772.5	3.44	22.60	22.93	- 5.29	+16.25	-16.24	221.91	16.84	20.33	23	13.5
2371773.5	3.46	22.48	22.81	- 5.26	+16.99	-16.44	222.53	16.92	11.34	23	50.4
2371774.5	3.48	22.35	22.69	- 5.23	+17.72	-16.64	223.16	16.99	2.34	..	.. .
2371775.5	3.50	22.22	22.59	- 5.21	+18.44	-16.84	223.78	17.06	353.33	0	27.4
2371776.5	3.52	22.09	22.49	- 5.20	+19.16	-17.03	224.40	17.12	344.31	1	04.4
2371777.5	3.55	21.95	22.41	- 5.19	+19.86	-17.23	225.03	17.17	335.28	1	41.4
2371778.5	3.57	21.80	22.34	- 5.20	+20.55	-17.42	225.65	17.21	326.24	2	18.5
2371779.5	3.59	21.66	22.28	- 5.20	+21.24	-17.61	226.28	17.25	317.18	2	55.7
2371780.5	3.62	21.51	22.24	- 5.22	+21.91	-17.80	226.90	17.27	308.12	3	32.9

Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2372530.5	3.66	21.26	113.45	-18.90	-27.03	-24.71	266.75	326.17	225.87	9 10.4
2372531.5	3.64	21.40	113.40	-18.90	-26.29	-24.72	267.38	326.19	216.81	9 47.5
2372532.5	3.61	21.54	113.33	-18.92	-25.53	-24.73	268.00	326.21	207.77	10 24.6
2372533.5	3.59	21.68	113.26	-18.93	-24.76	-24.74	268.63	326.23	198.75	11 01.6
2372534.5	3.57	21.81	113.16	-18.95	-23.98	-24.75	269.26	326.26	189.74	11 38.5
2372535.5	3.55	21.94	113.06	-18.98	-23.18	-24.75	269.89	326.29	180.74	12 15.4
2372536.5	3.53	22.06	112.94	-19.01	-22.37	-24.75	270.52	326.33	171.76	12 52.2
2372537.5	3.51	22.19	112.81	-19.04	-21.55	-24.75	271.14	326.37	162.79	13 29.0
2372538.5	3.49	22.30	112.66	-19.08	-20.71	-24.74	271.77	326.42	153.83	14 05.7
2372539.5	3.47	22.41	112.50	-19.13	-19.86	-24.73	272.40	326.47	144.89	14 42.3
2372540.5	3.46	22.52	112.33	-19.17	-19.00	-24.71	273.02	326.52	135.96	15 18.9
2372541.5	3.44	22.62	112.14	-19.22	-18.13	-24.70	273.65	326.58	127.04	15 55.5
2372542.5	3.43	22.71	111.95	-19.28	-17.24	-24.68	274.27	326.64	118.13	16 32.0
2372543.5	3.41	22.80	111.74	-19.34	-16.35	-24.65	274.90	326.71	109.23	17 08.5
2372544.5	3.40	22.88	111.52	-19.40	-15.44	-24.63	275.52	326.78	100.35	17 44.9
2372545.5	3.39	22.96	111.28	-19.47	-14.52	-24.60	276.15	326.85	91.47	18 21.2
2372546.5	3.38	23.03	111.04	-19.54	-13.60	-24.57	276.77	326.93	82.61	18 57.5
2372547.5	3.37	23.09	110.79	-19.61	-12.66	-24.53	277.39	327.01	73.76	19 33.8
2372548.5	3.36	23.14	110.53	-19.69	-11.72	-24.49	278.01	327.10	64.91	20 10.1
2372549.5	3.36	23.19	110.26	-19.77	-10.77	-24.45	278.63	327.19	56.07	20 46.3
2372550.5	3.35	23.22	109.98	-19.86	-9.81	-24.41	279.26	327.28	47.25	21 22.4
2372551.5	3.35	23.25	109.70	-19.94	-8.85	-24.36	279.88	327.38	38.42	21 58.6
2372552.5	3.34	23.27	109.40	-20.03	-7.88	-24.31	280.49	327.48	29.61	22 34.7
2372553.5	3.34	23.29	109.11	-20.13	-6.90	-24.26	281.11	327.58	20.80	23 10.8
2372554.5	3.34	23.29	108.80	-20.22	-5.92	-24.20	281.73	327.68	11.99	23 46.9
2372555.5	3.34	23.28	108.50	-20.32	-4.94	-24.14	282.35	327.79	3.19	0
2372556.5	3.35	23.27	108.19	-20.41	-3.96	-24.08	282.97	327.90	354.39	0 23.0
2372557.5	3.35	23.24	107.87	-20.52	-2.97	-24.01	283.58	328.01	345.60	0 59.0
2372558.5	3.35	23.21	107.56	-20.62	-1.99	-23.95	284.20	328.12	336.80	1 35.1
2372559.5	3.36	23.17	107.25	-20.72	-1.01	-23.88	284.81	328.24	328.01	2 11.2
2372560.5	3.37	23.12	106.93	-20.82	-0.03	-23.80	285.43	328.35	319.21	2 47.2
2372561.5	3.38	23.06	106.62	-20.93	+0.95	-23.73	286.04	328.47	310.42	3 23.3
2372562.5	3.39	22.99	106.31	-21.03	+1.93	-23.65	286.66	328.58	301.62	3 59.4
2372563.5	3.40	22.91	106.00	-21.14	+2.90	-23.57	287.27	328.69	292.81	4 35.5
2372564.5	3.41	22.83	105.69	-21.25	+3.86	-23.48	287.88	328.81	284.01	5 11.6
2372565.5	3.42	22.74	105.40	-21.35	+4.82	-23.39	288.49	328.92	275.19	5 47.7
2372566.5	3.44	22.64	105.10	-21.46	+5.77	-23.30	289.10	329.03	266.38	6 23.9
2372567.5	3.46	22.53	104.81	-21.57	+6.72	-23.21	289.71	329.14	257.55	7 00.1
2372568.5	3.47	22.41	104.53	-21.67	+7.65	-23.12	290.32	329.25	248.72	7 36.3
2372569.5	3.49	22.29	104.26	-21.78	+8.58	-23.02	290.93	329.36	239.88	8 12.6
2372570.5	3.51	22.16	103.99	-21.88	+9.50	-22.92	291.54	329.46	231.04	8 48.9
2372571.5	3.53	22.03	103.74	-21.99	+10.40	-22.82	292.14	329.56	222.18	9 25.2
2372572.5	3.56	21.89	103.49	-22.09	+11.30	-22.71	292.75	329.66	213.31	10 01.6
2372573.5	3.58	21.74	103.25	-22.19	+12.18	-22.60	293.35	329.75	204.44	10 38.0
2372574.5	3.61	21.59	103.02	-22.29	+13.05	-22.49	293.96	329.84	195.55	11 14.5
2372575.5	3.63	21.43	102.81	-22.39	+13.91	-22.38	294.56	329.93	186.65	11 51.0
2372576.5	3.66	21.27	102.60	-22.49	+14.75	-22.27	295.17	330.01	177.74	12 27.6
2372577.5	3.69	21.10	102.41	-22.59	+15.58	-22.15	295.77	330.09	168.82	13 04.2
2372578.5	3.72	20.93	102.23	-22.68	+16.40	-22.03	296.37	330.16	159.88	13 40.9
2372579.5	3.75	20.75	102.06	-22.77	+17.20	-21.91	296.97	330.23	150.94	14 17.6
2372580.5	3.78	20.58	101.91	-22.86	+17.99	-21.79	297.57	330.29	141.98	14 54.4
2372581.5	3.82	20.39	101.76	-22.95	+18.76	-21.66	298.17	330.35	133.00	15 31.2
2372582.5	3.85	20.21	101.63	-23.04	+19.52	-21.53	298.77	330.40	124.01	16 08.2
2372583.5	3.89	20.02	101.52	-23.13	+20.26	-21.40	299.36	330.45	115.01	16 45.1
2372584.5	3.92	19.84	101.42	-23.21	+20.98	-21.27	299.96	330.49	106.00	17 22.2
2372585.5	3.96	19.65	101.33	-23.30	+21.69	-21.13	300.56	330.53	96.96	17 59.3
2372586.5	4.00	19.45	101.26	-23.38	+22.38	-21.00	301.15	330.56	87.92	18 36.4
2372587.5	4.04	19.26	101.20	-23.45	+23.06	-20.86	301.74	330.58	78.86	19 13.7
2372588.5	4.08	19.07	101.16	-23.53	+23.72	-20.72	302.34	330.60	69.78	19 50.9
2372589.5	4.12	18.87	101.13	-23.60	+24.36	-20.57	302.93	330.61	60.69	20 28.3
2372590.5	4.17	18.68	101.12	-23.68	+24.99	-20.43	303.52	330.62	51.59	21 05.7

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_s °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2373320.5	4.72	16.48	172.68	- 2.69	-22.16	-12.79	328.09	327.25	171.03	12 55.2
2373321.5	4.70	16.58	172.56	- 2.80	-21.53	-12.58	328.64	327.20	162.04	13 32.1
2373322.5	4.67	16.67	172.44	- 2.92	-20.88	-12.38	329.19	327.13	153.06	14 08.9
2373323.5	4.64	16.77	172.30	- 3.04	-20.22	-12.18	329.74	327.06	144.10	14 45.6
2373324.5	4.62	16.86	172.15	- 3.17	-19.55	-11.98	330.29	326.99	135.15	15 22.3
2373325.5	4.59	16.94	171.99	- 3.30	-18.87	-11.77	330.83	326.91	126.21	15 58.9
2373326.5	4.57	17.03	171.81	- 3.45	-18.17	-11.57	331.38	326.82	117.28	16 35.5
2373327.5	4.55	17.10	171.62	- 3.59	-17.47	-11.36	331.92	326.73	108.37	17 12.1
2373328.5	4.53	17.18	171.42	- 3.75	-16.76	-11.16	332.47	326.64	99.46	17 48.5
2373329.5	4.51	17.25	171.21	- 3.91	-16.03	-10.95	333.01	326.54	90.57	18 25.0
2373330.5	4.50	17.32	170.99	- 4.07	-15.30	-10.75	333.55	326.44	81.69	19 01.4
2373331.5	4.48	17.38	170.76	- 4.24	-14.56	-10.54	334.09	326.33	72.82	19 37.7
2373332.5	4.46	17.44	170.52	- 4.42	-13.81	-10.33	334.63	326.23	63.95	20 14.0
2373333.5	4.45	17.49	170.27	- 4.60	-13.06	-10.12	335.17	326.11	55.10	20 50.3
2373334.5	4.44	17.53	170.00	- 4.78	-12.29	- 9.92	335.71	326.00	46.26	21 26.5
2373335.5	4.43	17.57	169.73	- 4.97	-11.52	- 9.71	336.25	325.88	37.42	22 02.7
2373336.5	4.42	17.61	169.46	- 5.16	-10.74	- 9.50	336.78	325.76	28.59	22 38.9
2373337.5	4.41	17.64	169.17	- 5.36	- 9.95	- 9.29	337.32	325.64	19.77	23 15.1
2373338.5	4.41	17.66	168.88	- 5.56	- 9.16	- 9.08	337.85	325.52	10.96	23 51.2
2373339.5	4.40	17.68	168.58	- 5.76	- 8.37	- 8.87	338.39	325.40	2.15	.. .. .
2373340.5	4.40	17.69	168.27	- 5.96	- 7.56	- 8.66	338.92	325.27	353.35	0 27.3
2373341.5	4.40	17.70	167.96	- 6.17	- 6.76	- 8.45	339.45	325.15	344.55	1 03.3
2373342.5	4.40	17.70	167.65	- 6.37	- 5.95	- 8.24	339.98	325.02	335.76	1 39.4
2373343.5	4.40	17.69	167.33	- 6.58	- 5.14	- 8.03	340.51	324.90	326.97	2 15.4
2373344.5	4.40	17.68	167.00	- 6.79	- 4.33	- 7.82	341.04	324.77	318.19	2 51.4
2373345.5	4.41	17.65	166.68	- 6.99	- 3.52	- 7.61	341.57	324.65	309.40	3 27.5
2373346.5	4.42	17.63	166.35	- 7.20	- 2.70	- 7.39	342.10	324.52	300.62	4 03.5
2373347.5	4.42	17.59	166.02	- 7.41	- 1.89	- 7.18	342.62	324.40	291.84	4 39.5
2373348.5	4.43	17.55	165.70	- 7.61	- 1.08	- 6.97	343.15	324.28	283.05	5 15.5
2373349.5	4.45	17.51	165.37	- 7.82	- 0.26	- 6.76	343.67	324.16	274.27	5 51.5
2373350.5	4.46	17.45	165.04	- 8.02	+ 0.54	- 6.55	344.20	324.05	265.49	6 27.5
2373351.5	4.47	17.40	164.72	- 8.22	+ 1.35	- 6.33	344.72	323.94	256.70	7 03.5
2373352.5	4.49	17.33	164.40	- 8.41	+ 2.15	- 6.12	345.24	323.82	247.91	7 39.6
2373353.5	4.51	17.26	164.08	- 8.61	+ 2.95	- 5.91	345.76	323.72	239.11	8 15.7
2373354.5	4.53	17.18	163.76	- 8.80	+ 3.74	- 5.70	346.28	323.61	230.31	8 51.7
2373355.5	4.55	17.10	163.45	- 8.98	+ 4.52	- 5.49	346.80	323.51	221.51	9 27.9
2373356.5	4.58	17.01	163.15	- 9.16	+ 5.30	- 5.27	347.32	323.41	212.70	10 04.0
2373357.5	4.60	16.92	162.86	- 9.34	+ 6.07	- 5.06	347.84	323.32	203.88	10 40.2
2373358.5	4.63	16.82	162.57	- 9.51	+ 6.83	- 4.85	348.35	323.23	195.06	11 16.4
2373359.5	4.66	16.72	162.28	- 9.68	+ 7.59	- 4.64	348.87	323.14	186.22	11 52.6
2373360.5	4.69	16.62	162.01	- 9.84	+ 8.33	- 4.42	349.38	323.05	177.38	12 28.9
2373361.5	4.72	16.50	161.74	-10.00	+ 9.07	- 4.21	349.90	322.97	168.53	13 05.2
2373362.5	4.75	16.39	161.49	-10.15	+ 9.79	- 4.00	350.41	322.90	159.67	13 41.5
2373363.5	4.78	16.27	161.24	-10.29	+10.50	- 3.79	350.92	322.83	150.80	14 17.9
2373364.5	4.82	16.15	161.00	-10.43	+11.21	- 3.58	351.43	322.76	141.92	14 54.4
2373365.5	4.86	16.03	160.78	-10.56	+11.90	- 3.36	351.94	322.69	133.03	15 30.9
2373366.5	4.90	15.90	160.56	-10.68	+12.58	- 3.15	352.45	322.63	124.13	16 07.4
2373367.5	4.94	15.77	160.36	-10.80	+13.25	- 2.94	352.96	322.57	115.22	16 44.0
2373368.5	4.98	15.64	160.16	-10.91	+13.90	- 2.73	353.47	322.52	106.29	17 20.7
2373369.5	5.02	15.51	159.98	-11.02	+14.55	- 2.52	353.98	322.47	97.36	17 57.3
2373370.5	5.06	15.37	159.81	-11.12	+15.18	- 2.31	354.48	322.42	88.41	18 34.1
2373371.5	5.11	15.23	159.65	-11.21	+15.80	- 2.10	354.99	322.38	79.45	19 10.9
2373372.5	5.16	15.09	159.50	-11.30	+16.41	- 1.88	355.49	322.34	70.48	19 47.7
2373373.5	5.21	14.96	159.37	-11.37	+17.00	- 1.67	356.00	322.31	61.50	20 24.6
2373374.5	5.25	14.82	159.24	-11.45	+17.58	- 1.46	356.50	322.27	52.50	21 01.6
2373375.5	5.31	14.67	159.13	-11.51	+18.15	- 1.25	357.00	322.24	43.49	21 38.6
2373376.5	5.36	14.53	159.03	-11.57	+18.70	- 1.04	357.51	322.22	34.47	22 15.6
2373377.5	5.41	14.39	158.94	-11.62	+19.25	- 0.83	358.01	322.19	25.44	22 52.8
2373378.5	5.46	14.25	158.87	-11.67	+19.77	- 0.63	358.51	322.17	16.39	23 29.9
2373379.5	5.52	14.11	158.81	-11.71	+20.29	- 0.42	359.00	322.16	7.33	.. .. .
2373380.5	5.58	13.96	158.76	-11.74	+20.79	- 0.21	359.50	322.14	358.26	0 07.1

PHYSICAL EPHEMERIS OF MARS, 1787-1788

Julian Day	Light-time	Diameter	A_s+180°	D_s	A_s-A_s	D_s	L_s	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2374090.5	5.82	13.38	212.05	+12.40	-22.25	+ 4.48	10.76	349.75	318.20	2 51.5
2374091.5	5.78	13.47	211.92	+12.30	-21.69	+ 4.68	11.24	349.67	309.23	3 28.3
2374092.5	5.74	13.56	211.79	+12.19	-21.11	+ 4.88	11.72	349.57	300.27	4 05.0
2374093.5	5.70	13.65	211.63	+12.09	-20.52	+ 5.08	12.20	349.47	291.32	4 41.7
2374094.5	5.67	13.73	211.47	+11.97	-19.92	+ 5.27	12.68	349.35	282.38	5 18.4
2374095.5	5.64	13.81	211.29	+11.85	-19.30	+ 5.47	13.16	349.23	273.46	5 54.9
2374096.5	5.60	13.89	211.10	+11.73	-18.68	+ 5.67	13.64	349.10	264.55	6 31.5
2374097.5	5.57	13.97	210.90	+11.60	-18.04	+ 5.86	14.12	348.96	255.65	7 08.0
2374098.5	5.54	14.05	210.68	+11.47	-17.38	+ 6.05	14.59	348.81	246.77	7 44.4
2374099.5	5.51	14.12	210.46	+11.34	-16.72	+ 6.25	15.07	348.65	237.89	8 20.8
2374100.5	5.48	14.19	210.22	+11.19	-16.05	+ 6.44	15.54	348.49	229.03	8 57.1
2374101.5	5.46	14.26	209.97	+11.05	-15.36	+ 6.63	16.02	348.32	220.18	9 33.4
2374102.5	5.43	14.32	209.71	+10.90	-14.66	+ 6.82	16.49	348.14	211.34	10 09.6
2374103.5	5.41	14.38	209.44	+10.75	-13.96	+ 7.02	16.96	347.95	202.50	10 45.8
2374104.5	5.39	14.44	209.16	+10.59	-13.24	+ 7.21	17.43	347.76	193.68	11 22.0
2374105.5	5.37	14.49	208.87	+10.43	-12.51	+ 7.40	17.91	347.56	184.87	11 58.1
2374106.5	5.35	14.54	208.57	+10.27	-11.78	+ 7.59	18.38	347.35	176.07	12 34.2
2374107.5	5.34	14.59	208.26	+10.11	-11.04	+ 7.77	18.85	347.14	167.27	13 10.2
2374108.5	5.32	14.63	207.94	+ 9.94	-10.28	+ 7.96	19.32	346.93	158.48	13 46.2
2374109.5	5.31	14.66	207.62	+ 9.77	- 9.53	+ 8.15	19.79	346.70	149.70	14 22.2
2374110.5	5.30	14.70	207.29	+ 9.60	- 8.76	+ 8.33	20.26	346.48	140.93	14 58.2
2374111.5	5.29	14.72	206.95	+ 9.43	- 7.99	+ 8.52	20.72	346.25	132.16	15 34.1
2374112.5	5.28	14.75	206.61	+ 9.25	- 7.21	+ 8.71	21.19	346.01	123.40	16 10.0
2374113.5	5.27	14.76	206.26	+ 9.08	- 6.43	+ 8.89	21.66	345.78	114.64	16 45.9
2374114.5	5.27	14.77	205.91	+ 8.90	- 5.64	+ 9.07	22.13	345.54	105.88	17 21.8
2374115.5	5.27	14.78	205.55	+ 8.72	- 4.85	+ 9.26	22.59	345.29	97.13	17 57.7
2374116.5	5.27	14.78	205.19	+ 8.54	- 4.06	+ 9.44	23.06	345.05	88.38	18 33.5
2374117.5	5.27	14.78	204.83	+ 8.37	- 3.26	+ 9.62	23.52	344.80	79.64	19 09.4
2374118.5	5.27	14.77	204.47	+ 8.19	- 2.46	+ 9.80	23.99	344.56	70.89	19 45.2
2374119.5	5.27	14.76	204.10	+ 8.01	- 1.67	+ 9.98	24.45	344.31	62.14	20 21.1
2374120.5	5.28	14.74	203.74	+ 7.84	- 0.87	+10.16	24.91	344.07	53.40	20 56.9
2374121.5	5.29	14.71	203.38	+ 7.67	- 0.07	+10.34	25.38	343.82	44.65	21 32.8
2374122.5	5.30	14.69	203.02	+ 7.50	+ 0.72	+10.51	25.84	343.58	35.90	22 08.7
2374123.5	5.31	14.65	202.66	+ 7.33	+ 1.52	+10.69	26.30	343.34	27.15	22 44.6
2374124.5	5.33	14.61	202.30	+ 7.16	+ 2.31	+10.87	26.76	343.10	18.39	23 20.5
2374125.5	5.34	14.57	201.95	+ 7.00	+ 3.09	+11.04	27.22	342.87	9.63	23 56.4
2374126.5	5.36	14.52	201.60	+ 6.84	+ 3.87	+11.22	27.68	342.64	0.87	.. ..
2374127.5	5.38	14.47	201.26	+ 6.68	+ 4.65	+11.39	28.14	342.41	352.10	0 32.4
2374128.5	5.40	14.41	200.92	+ 6.53	+ 5.42	+11.56	28.60	342.18	343.32	1 08.4
2374129.5	5.43	14.35	200.59	+ 6.38	+ 6.19	+11.73	29.06	341.97	334.54	1 44.4
2374130.5	5.45	14.28	200.27	+ 6.24	+ 6.94	+11.90	29.52	341.75	325.75	2 20.4
2374131.5	5.48	14.21	199.95	+ 6.10	+ 7.69	+12.07	29.98	341.55	316.95	2 56.5
2374132.5	5.51	14.14	199.64	+ 5.97	+ 8.44	+12.24	30.43	341.34	308.14	3 32.6
2374133.5	5.54	14.06	199.34	+ 5.84	+ 9.17	+12.41	30.89	341.15	299.33	4 08.8
2374134.5	5.57	13.98	199.05	+ 5.71	+ 9.90	+12.58	31.35	340.96	290.50	4 45.0
2374135.5	5.60	13.90	198.77	+ 5.59	+10.61	+12.75	31.80	340.78	281.67	5 21.2
2374136.5	5.64	13.81	198.50	+ 5.48	+11.32	+12.91	32.26	340.60	272.83	5 57.5
2374137.5	5.67	13.72	198.24	+ 5.37	+12.02	+13.08	32.71	340.43	263.97	6 33.8
2374138.5	5.71	13.63	197.98	+ 5.27	+12.71	+13.24	33.17	340.27	255.11	7 10.2
2374139.5	5.75	13.54	197.74	+ 5.18	+13.39	+13.40	33.62	340.11	246.23	7 46.6
2374140.5	5.79	13.44	197.51	+ 5.09	+14.05	+13.57	34.08	339.97	237.34	8 23.1
2374141.5	5.83	13.34	197.29	+ 5.00	+14.71	+13.73	34.53	339.83	228.45	8 59.6
2374142.5	5.88	13.24	197.08	+ 4.92	+15.35	+13.89	34.98	339.70	219.54	9 36.1
2374143.5	5.92	13.14	196.88	+ 4.85	+15.99	+14.05	35.43	339.57	210.62	10 12.7
2374144.5	5.97	13.04	196.69	+ 4.79	+16.61	+14.21	35.89	339.45	201.68	10 49.4
2374145.5	6.02	12.93	196.52	+ 4.73	+17.22	+14.36	36.34	339.35	192.74	11 26.1
2374146.5	6.07	12.83	196.36	+ 4.67	+17.82	+14.52	36.79	339.25	183.78	12 02.9
2374147.5	6.12	12.72	196.21	+ 4.63	+18.41	+14.68	37.24	339.15	174.81	12 39.7
2374148.5	6.17	12.61	196.07	+ 4.59	+18.99	+14.83	37.69	339.07	165.83	13 16.6
2374149.5	6.23	12.51	195.94	+ 4.55	+19.55	+14.98	38.14	338.99	156.84	13 53.5
2374150.5	6.28	12.40	195.82	+ 4.52	+20.11	+15.14	38.59	338.92	147.83	14 30.5

PHYSICAL EPHEMERIS OF MARS, 1790

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Julian Day	Light- time	Diameter	A_S+180°	D_R	A_S-A_R	D_S	L_S	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2374855.5	6.40	12.17	247.17	+20.86	-23.29	+17.72	46.65	12.23	155.28	13 59.7
2374856.5	6.35	12.26	247.03	+20.81	-22.69	+17.86	47.09	12.15	146.33	14 36.4
2374857.5	6.30	12.35	246.87	+20.75	-22.09	+17.99	47.53	12.06	137.40	15 13.0
2374858.5	6.26	12.44	246.69	+20.69	-21.47	+18.12	47.98	11.95	128.48	15 49.6
2374859.5	6.21	12.53	246.50	+20.62	-20.83	+18.25	48.42	11.84	119.57	16 26.1
2374860.5	6.17	12.61	246.30	+20.56	-20.18	+18.38	48.86	11.73	110.68	17 02.5
2374861.5	6.13	12.70	246.08	+20.49	-19.52	+18.51	49.30	11.60	101.79	17 38.9
2374862.5	6.09	12.78	245.85	+20.42	-18.84	+18.63	49.75	11.46	92.93	18 15.2
2374863.5	6.05	12.86	245.61	+20.36	-18.15	+18.76	50.19	11.32	84.07	18 51.5
2374864.5	6.02	12.94	245.35	+20.28	-17.45	+18.88	50.63	11.17	75.23	19 27.7
2374865.5	5.98	13.02	245.08	+20.21	-16.73	+19.01	51.07	11.01	66.40	20 03.9
2374866.5	5.95	13.09	244.80	+20.14	-16.00	+19.13	51.51	10.85	57.58	20 40.0
2374867.5	5.91	13.16	244.51	+20.06	-15.26	+19.25	51.95	10.67	48.77	21 16.1
2374868.5	5.88	13.23	244.20	+19.99	-14.51	+19.37	52.39	10.49	39.98	21 52.1
2374869.5	5.86	13.30	243.89	+19.91	-13.74	+19.49	52.84	10.30	31.19	22 28.1
2374870.5	5.83	13.36	243.56	+19.83	-12.96	+19.61	53.28	10.11	22.41	23 04.0
2374871.5	5.80	13.42	243.23	+19.75	-12.18	+19.72	53.72	9.91	13.65	23 39.9
2374872.5	5.78	13.47	242.88	+19.67	-11.38	+19.84	54.16	9.70	4.89	.. ..
2374873.5	5.76	13.53	242.53	+19.58	-10.58	+19.95	54.60	9.48	356.14	0 15.8
2374874.5	5.74	13.57	242.16	+19.50	- 9.76	+20.07	55.04	9.27	347.40	0 51.6
2374875.5	5.72	13.62	241.79	+19.42	- 8.94	+20.18	55.47	9.04	338.67	1 27.4
2374876.5	5.70	13.66	241.42	+19.33	- 8.11	+20.29	55.91	8.81	329.94	2 03.2
2374877.5	5.68	13.70	241.03	+19.24	- 7.27	+20.40	56.35	8.58	321.22	2 39.0
2374878.5	5.67	13.73	240.64	+19.16	- 6.43	+20.51	56.79	8.34	312.51	3 14.7
2374879.5	5.66	13.76	240.25	+19.07	- 5.58	+20.61	57.23	8.10	303.80	3 50.4
2374880.5	5.65	13.78	239.85	+18.98	- 4.72	+20.72	57.67	7.85	295.09	4 26.1
2374881.5	5.64	13.80	239.44	+18.90	- 3.86	+20.82	58.11	7.60	286.39	5 01.7
2374882.5	5.64	13.81	239.04	+18.81	- 3.00	+20.93	58.55	7.35	277.69	5 37.4
2374883.5	5.63	13.82	238.63	+18.72	- 2.13	+21.03	58.98	7.10	268.99	6 13.0
2374884.5	5.63	13.83	238.22	+18.64	- 1.27	+21.13	59.42	6.84	260.29	6 48.7
2374885.5	5.63	13.83	237.81	+18.55	- 0.40	+21.23	59.86	6.59	251.60	7 24.3
2374886.5	5.63	13.82	237.40	+18.47	+ 0.47	+21.33	60.30	6.33	242.90	8 00.0
2374887.5	5.63	13.82	236.99	+18.38	+ 1.34	+21.42	60.74	6.07	234.20	8 35.7
2374888.5	5.64	13.80	236.58	+18.30	+ 2.20	+21.52	61.17	5.82	225.50	9 11.3
2374889.5	5.65	13.78	236.17	+18.22	+ 3.07	+21.61	61.61	5.56	216.79	9 47.0
2374890.5	5.66	13.76	235.77	+18.14	+ 3.93	+21.71	62.05	5.31	208.08	10 22.7
2374891.5	5.67	13.73	235.37	+18.06	+ 4.79	+21.80	62.49	5.06	199.37	10 58.5
2374892.5	5.68	13.70	234.98	+17.98	+ 5.64	+21.89	62.92	4.81	190.65	11 34.2
2374893.5	5.70	13.67	234.60	+17.91	+ 6.49	+21.98	63.36	4.56	181.93	12 10.0
2374894.5	5.71	13.63	234.21	+17.83	+ 7.33	+22.06	63.80	4.32	173.20	12 45.8
2374895.5	5.73	13.58	233.84	+17.76	+ 8.17	+22.15	64.23	4.08	164.46	13 21.6
2374896.5	5.75	13.54	233.47	+17.69	+ 9.00	+22.24	64.67	3.85	155.71	13 57.5
2374897.5	5.77	13.48	233.12	+17.63	+ 9.82	+22.32	65.11	3.62	146.96	14 33.4
2374898.5	5.80	13.43	232.77	+17.57	+10.63	+22.40	65.55	3.39	138.19	15 09.4
2374899.5	5.82	13.37	232.43	+17.51	+11.44	+22.48	65.98	3.18	129.42	15 45.4
2374900.5	5.85	13.31	232.10	+17.45	+12.23	+22.56	66.42	2.96	120.63	16 21.4
2374901.5	5.88	13.24	231.77	+17.40	+13.02	+22.64	66.86	2.76	111.84	16 57.5
2374902.5	5.91	13.18	231.46	+17.35	+13.80	+22.72	67.29	2.56	103.04	17 33.7
2374903.5	5.94	13.10	231.16	+17.30	+14.56	+22.80	67.73	2.36	94.22	18 09.8
2374904.5	5.97	13.03	230.88	+17.25	+15.32	+22.87	68.17	2.18	85.39	18 46.1
2374905.5	6.01	12.96	230.60	+17.21	+16.06	+22.94	68.60	2.00	76.55	19 22.4
2374906.5	6.05	12.88	230.33	+17.18	+16.79	+23.01	69.04	1.83	67.70	19 58.7
2374907.5	6.08	12.80	230.08	+17.14	+17.52	+23.08	69.48	1.66	58.84	20 35.1
2374908.5	6.12	12.72	229.84	+17.11	+18.23	+23.15	69.91	1.51	49.96	21 11.6
2374909.5	6.16	12.63	229.61	+17.09	+18.92	+23.22	70.35	1.36	41.07	21 48.1
2374910.5	6.20	12.55	229.39	+17.07	+19.61	+23.29	70.78	1.22	32.17	22 24.6
2374911.5	6.25	12.46	229.19	+17.05	+20.28	+23.35	71.22	1.08	23.26	23 01.2
2374912.5	6.29	12.37	229.00	+17.03	+20.95	+23.42	71.66	0.96	14.33	23 37.9
2374913.5	6.34	12.28	228.82	+17.02	+21.60	+23.48	72.09	0.84	5.39	.. ..
2374914.5	6.39	12.19	228.65	+17.02	+22.23	+23.54	72.53	0.74	356.43	0 14.6
2374915.5	6.43	12.10	228.50	+17.01	+22.86	+23.60	72.97	0.64	347.47	0 51.4

Julian Day	Light- time m	Diameter "	$A_s + 180^\circ$ °	D_E °	$A_s - A_E$ °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2375620.5	6.38	12.21	283.03	+21.82	-23.07	+24.42	80.86	30.16	351.79	0 33.7
2375621.5	6.32	12.31	282.88	+21.82	-22.44	+24.45	81.30	30.10	342.84	1 10.4
2375622.5	6.27	12.41	282.72	+21.82	-21.80	+24.48	81.74	30.04	333.90	1 47.0
2375623.5	6.22	12.51	282.55	+21.83	-21.15	+24.51	82.18	29.97	324.98	2 23.6
2375624.5	6.17	12.61	282.36	+21.83	-20.48	+24.53	82.62	29.90	316.07	3 00.2
2375625.5	6.13	12.71	282.16	+21.84	-19.79	+24.56	83.06	29.81	307.18	3 36.6
2375626.5	6.08	12.80	281.94	+21.85	-19.10	+24.58	83.50	29.73	298.30	4 13.0
2375627.5	6.04	12.90	281.71	+21.86	-18.39	+24.60	83.94	29.64	289.43	4 49.4
2375628.5	5.99	12.99	281.47	+21.87	-17.66	+24.62	84.37	29.54	280.57	5 25.7
2375629.5	5.95	13.08	281.22	+21.89	-16.92	+24.64	84.81	29.44	271.73	6 02.0
2375630.5	5.91	13.17	280.95	+21.91	-16.17	+24.66	85.25	29.33	262.90	6 38.2
2375631.5	5.87	13.26	280.67	+21.93	-15.41	+24.68	85.69	29.21	254.08	7 14.3
2375632.5	5.83	13.35	280.38	+21.95	-14.63	+24.69	86.13	29.09	245.27	7 50.4
2375633.5	5.80	13.43	280.07	+21.97	-13.84	+24.70	86.57	28.97	236.48	8 26.4
2375634.5	5.76	13.51	279.76	+21.99	-13.04	+24.71	87.02	28.84	227.70	9 02.4
2375635.5	5.73	13.58	279.43	+22.02	-12.23	+24.72	87.46	28.70	218.92	9 38.4
2375636.5	5.70	13.66	279.09	+22.05	-11.41	+24.73	87.90	28.56	210.16	10 14.3
2375637.5	5.67	13.73	278.75	+22.07	-10.58	+24.74	88.34	28.41	201.40	10 50.2
2375638.5	5.64	13.79	278.39	+22.10	-9.73	+24.74	88.78	28.26	192.66	11 26.0
2375639.5	5.62	13.86	278.02	+22.13	-8.88	+24.75	89.22	28.11	183.92	12 01.8
2375640.5	5.59	13.92	277.65	+22.17	-8.02	+24.75	89.66	27.94	175.19	12 37.6
2375641.5	5.57	13.97	277.27	+22.20	-7.15	+24.75	90.11	27.78	166.47	13 13.3
2375642.5	5.55	14.03	276.88	+22.23	-6.28	+24.75	90.55	27.61	157.76	13 49.0
2375643.5	5.53	14.07	276.49	+22.27	-5.39	+24.75	90.99	27.44	149.05	14 24.7
2375644.5	5.51	14.12	276.08	+22.30	-4.51	+24.74	91.43	27.26	140.35	15 00.4
2375645.5	5.50	14.16	275.68	+22.34	-3.61	+24.74	91.88	27.08	131.65	15 36.0
2375646.5	5.49	14.19	275.27	+22.37	-2.71	+24.73	92.32	26.90	122.95	16 11.6
2375647.5	5.47	14.22	274.85	+22.41	-1.81	+24.72	92.76	26.71	114.26	16 47.3
2375648.5	5.46	14.25	274.44	+22.45	-0.90	+24.71	93.21	26.52	105.58	17 22.9
2375649.5	5.46	14.27	274.02	+22.49	0.00	+24.70	93.65	26.33	96.89	17 58.5
2375650.5	5.45	14.28	273.59	+22.53	+0.91	+24.68	94.10	26.14	88.20	18 34.1
2375651.5	5.45	14.29	273.17	+22.56	+1.83	+24.67	94.54	25.95	79.52	19 09.7
2375652.5	5.44	14.30	272.75	+22.60	+2.74	+24.65	94.99	25.75	70.83	19 45.3
2375653.5	5.44	14.30	272.33	+22.64	+3.65	+24.63	95.43	25.55	62.15	20 20.9
2375654.5	5.44	14.30	271.91	+22.68	+4.56	+24.61	95.88	25.36	53.46	20 56.5
2375655.5	5.45	14.29	271.49	+22.72	+5.46	+24.59	96.32	25.16	44.77	21 32.2
2375656.5	5.45	14.28	271.08	+22.76	+6.37	+24.57	96.77	24.97	36.07	22 07.8
2375657.5	5.46	14.26	270.67	+22.80	+7.26	+24.54	97.22	24.77	27.37	22 43.5
2375658.5	5.47	14.24	270.27	+22.84	+8.16	+24.51	97.66	24.58	18.66	23 19.2
2375659.5	5.48	14.22	269.87	+22.88	+9.05	+24.49	98.11	24.39	9.95	23 55.0
2375660.5	5.49	14.18	269.48	+22.91	+9.93	+24.46	98.56	24.20	1.23	.. ..
2375661.5	5.50	14.15	269.10	+22.95	+10.80	+24.43	99.01	24.01	352.50	0 30.7
2375662.5	5.52	14.11	268.72	+22.99	+11.67	+24.39	99.45	23.83	343.77	1 06.6
2375663.5	5.53	14.07	268.35	+23.03	+12.53	+24.36	99.90	23.65	335.02	1 42.4
2375664.5	5.55	14.02	267.99	+23.07	+13.38	+24.32	100.35	23.47	326.27	2 18.3
2375665.5	5.57	13.97	267.65	+23.11	+14.22	+24.28	100.80	23.30	317.50	2 54.2
2375666.5	5.59	13.92	267.31	+23.15	+15.05	+24.24	101.25	23.13	308.73	3 30.2
2375667.5	5.62	13.86	266.98	+23.19	+15.87	+24.20	101.70	22.96	299.94	4 06.3
2375668.5	5.64	13.80	266.67	+23.22	+16.67	+24.16	102.15	22.80	291.14	4 42.3
2375669.5	5.67	13.74	266.36	+23.26	+17.47	+24.12	102.60	22.65	282.33	5 18.5
2375670.5	5.69	13.67	266.07	+23.30	+18.25	+24.07	103.05	22.50	273.51	5 54.7
2375671.5	5.72	13.60	265.79	+23.34	+19.03	+24.02	103.51	22.36	264.67	6 30.9
2375672.5	5.75	13.53	265.52	+23.38	+19.78	+23.97	103.96	22.22	255.83	7 07.2
2375673.5	5.79	13.46	265.27	+23.42	+20.53	+23.92	104.41	22.09	246.97	7 43.6
2375674.5	5.82	13.38	265.03	+23.46	+21.26	+23.87	104.86	21.97	238.09	8 20.0
2375675.5	5.85	13.30	264.80	+23.50	+21.98	+23.82	105.32	21.85	229.20	8 56.5
2375676.5	5.89	13.22	264.58	+23.54	+22.69	+23.76	105.77	21.73	220.30	9 33.0
2375677.5	5.92	13.14	264.38	+23.57	+23.38	+23.70	106.22	21.63	211.38	10 09.6
2375678.5	5.96	13.06	264.19	+23.61	+24.06	+23.64	106.68	21.54	202.45	10 46.2
2375679.5	6.00	12.97	264.02	+23.65	+24.73	+23.58	107.13	21.45	193.51	11 23.0
2375680.5	6.04	12.89	263.86	+23.70	+25.38	+23.52	107.59	21.36	184.55	11 59.7

Julian Day	Light- time m	Diameter "	A_S+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2376390.5	5.72	13.62	321.23	+14.22	-20.65	+21.65	118.22	38.70	140.55	15 00.3
2376391.5	5.66	13.75	321.13	+14.27	-20.06	+21.55	118.69	38.70	131.56	15 37.1
2376392.5	5.61	13.87	321.01	+14.33	-19.45	+21.45	119.15	38.70	122.59	16 13.9
2376393.5	5.56	14.00	320.88	+14.40	-18.83	+21.34	119.62	38.70	113.62	16 50.7
2376394.5	5.51	14.12	320.74	+14.47	-18.19	+21.24	120.09	38.70	104.67	17 27.3
2376395.5	5.46	14.24	320.58	+14.55	-17.55	+21.13	120.56	38.70	95.72	18 04.0
2376396.5	5.42	14.37	320.42	+14.63	-16.89	+21.02	121.03	38.70	86.79	18 40.6
2376397.5	5.37	14.49	320.24	+14.71	-16.22	+20.91	121.50	38.70	77.87	19 17.1
2376398.5	5.33	14.61	320.05	+14.80	-15.54	+20.80	121.98	38.70	68.97	19 53.6
2376399.5	5.29	14.72	319.85	+14.90	-14.85	+20.69	122.45	38.70	60.07	20 30.1
2376400.5	5.25	14.84	319.63	+15.00	-14.15	+20.58	122.92	38.69	51.19	21 06.5
2376401.5	5.21	14.95	319.41	+15.11	-13.43	+20.46	123.40	38.69	42.31	21 42.8
2376402.5	5.17	15.06	319.18	+15.22	-12.71	+20.34	123.87	38.69	33.45	22 19.1
2376403.5	5.13	15.17	318.93	+15.33	-11.97	+20.22	124.34	38.68	24.59	22 55.4
2376404.5	5.10	15.27	318.67	+15.45	-11.23	+20.10	124.82	38.67	15.75	23 31.6
2376405.5	5.06	15.37	318.41	+15.57	-10.47	+19.98	125.30	38.67	6.91	.. ..
2376406.5	5.03	15.47	318.13	+15.70	- 9.71	+19.86	125.77	38.66	358.09	0 07.8
2376407.5	5.00	15.57	317.85	+15.83	- 8.93	+19.73	126.25	38.65	349.27	0 44.0
2376408.5	4.97	15.66	317.56	+15.97	- 8.15	+19.61	126.73	38.63	340.47	1 20.1
2376409.5	4.94	15.75	317.26	+16.10	- 7.36	+19.48	127.21	38.62	331.67	1 56.2
2376410.5	4.92	15.83	316.95	+16.24	- 6.56	+19.35	127.69	38.61	322.87	2 32.2
2376411.5	4.89	15.91	316.63	+16.39	- 5.75	+19.22	128.17	38.59	314.09	3 08.2
2376412.5	4.87	15.98	316.31	+16.53	- 4.94	+19.09	128.65	38.57	305.31	3 44.2
2376413.5	4.85	16.05	315.98	+16.68	- 4.12	+18.95	129.13	38.55	296.54	4 20.2
2376414.5	4.83	16.12	315.64	+16.83	- 3.30	+18.82	129.61	38.53	287.77	4 56.1
2376415.5	4.81	16.18	315.30	+16.99	- 2.47	+18.68	130.09	38.50	279.00	5 32.1
2376416.5	4.80	16.23	314.95	+17.14	- 1.63	+18.54	130.58	38.48	270.25	6 08.0
2376417.5	4.78	16.28	314.61	+17.30	- 0.80	+18.40	131.06	38.45	261.49	6 43.9
2376418.5	4.77	16.33	314.25	+17.45	+ 0.05	+18.26	131.55	38.42	252.74	7 19.7
2376419.5	4.76	16.37	313.90	+17.61	+ 0.89	+18.12	132.03	38.39	243.99	7 55.6
2376420.5	4.75	16.40	313.54	+17.77	+ 1.74	+17.97	132.52	38.36	235.24	8 31.5
2376421.5	4.74	16.43	313.18	+17.92	+ 2.58	+17.83	133.01	38.32	226.49	9 07.3
2376422.5	4.73	16.45	312.82	+18.08	+ 3.43	+17.68	133.49	38.29	217.74	9 43.2
2376423.5	4.73	16.47	312.47	+18.24	+ 4.28	+17.53	133.98	38.25	209.00	10 19.1
2376424.5	4.72	16.48	312.11	+18.40	+ 5.12	+17.38	134.47	38.21	200.25	10 54.9
2376425.5	4.72	16.49	311.75	+18.55	+ 5.96	+17.23	134.96	38.17	191.49	11 30.8
2376426.5	4.72	16.49	311.40	+18.70	+ 6.80	+17.08	135.45	38.13	182.74	12 06.7
2376427.5	4.72	16.48	311.05	+18.86	+ 7.64	+16.93	135.94	38.08	173.98	12 42.7
2376428.5	4.73	16.47	310.71	+19.01	+ 8.47	+16.77	136.44	38.04	165.21	13 18.6
2376429.5	4.73	16.45	310.37	+19.16	+ 9.30	+16.61	136.93	37.99	156.44	13 54.6
2376430.5	4.74	16.43	310.04	+19.30	+10.12	+16.46	137.42	37.95	147.66	14 30.6
2376431.5	4.75	16.40	309.71	+19.44	+10.93	+16.30	137.92	37.90	138.88	15 06.6
2376432.5	4.75	16.37	309.39	+19.59	+11.74	+16.14	138.41	37.86	130.09	15 42.7
2376433.5	4.77	16.34	309.08	+19.72	+12.54	+15.97	138.91	37.81	121.29	16 18.8
2376434.5	4.78	16.29	308.78	+19.86	+13.33	+15.81	139.40	37.77	112.48	16 54.9
2376435.5	4.79	16.25	308.48	+19.99	+14.11	+15.64	139.90	37.72	103.67	17 31.1
2376436.5	4.81	16.20	308.20	+20.12	+14.89	+15.48	140.40	37.68	94.84	18 07.3
2376437.5	4.82	16.14	307.92	+20.24	+15.65	+15.31	140.90	37.63	86.00	18 43.6
2376438.5	4.84	16.08	307.66	+20.36	+16.40	+15.14	141.40	37.59	77.16	19 19.9
2376439.5	4.86	16.02	307.40	+20.48	+17.14	+14.97	141.90	37.55	68.30	19 56.3
2376440.5	4.88	15.96	307.16	+20.59	+17.87	+14.80	142.40	37.51	59.43	20 32.7
2376441.5	4.90	15.89	306.93	+20.70	+18.59	+14.63	142.90	37.47	50.55	21 09.2
2376442.5	4.92	15.81	306.71	+20.81	+19.30	+14.45	143.41	37.43	41.65	21 45.7
2376443.5	4.95	15.74	306.50	+20.91	+20.00	+14.28	143.91	37.40	32.75	22 22.3
2376444.5	4.97	15.66	306.31	+21.01	+20.68	+14.10	144.42	37.36	23.83	22 58.9
2376445.5	5.00	15.58	306.12	+21.10	+21.35	+13.92	144.92	37.33	14.90	23 35.6
2376446.5	5.02	15.50	305.95	+21.19	+22.01	+13.74	145.43	37.30	5.95	.. ..
2376447.5	5.05	15.41	305.80	+21.27	+22.65	+13.56	145.93	37.27	356.99	0 12.3
2376448.5	5.08	15.32	305.65	+21.35	+23.28	+13.38	146.44	37.25	348.02	0 49.1
2376449.5	5.11	15.23	305.52	+21.43	+23.90	+13.20	146.95	37.23	339.03	1 26.0
2376450.5	5.14	15.14	305.41	+21.50	+24.50	+13.01	147.46	37.21	330.03	2 02.9

Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2377170.5	4.62	16.83	7.53	- 3.02	-21.40	+ 6.31	164.79	25.60	190.25	11 36.6
2377171.5	4.58	17.01	7.54	- 2.95	-20.91	+ 6.09	165.33	25.61	181.15	12 13.9
2377172.5	4.53	17.18	7.53	- 2.88	-20.41	+ 5.87	165.87	25.63	172.06	12 51.2
2377173.5	4.49	17.35	7.51	- 2.80	-19.89	+ 5.65	166.41	25.66	162.98	13 28.4
2377174.5	4.44	17.53	7.48	- 2.72	-19.36	+ 5.42	166.95	25.69	153.91	14 05.6
2377175.5	4.40	17.70	7.44	- 2.63	-18.82	+ 5.20	167.50	25.73	144.86	14 42.8
2377176.5	4.36	17.87	7.39	- 2.54	-18.27	+ 4.98	168.04	25.77	135.81	15 19.8
2377177.5	4.32	18.04	7.33	- 2.43	-17.71	+ 4.75	168.59	25.82	126.78	15 56.9
2377178.5	4.28	18.21	7.25	- 2.33	-17.14	+ 4.53	169.14	25.88	117.75	16 33.9
2377179.5	4.24	18.37	7.17	- 2.21	-16.55	+ 4.30	169.68	25.94	108.74	17 10.8
2377180.5	4.20	18.54	7.07	- 2.09	-15.96	+ 4.07	170.23	26.01	99.73	17 47.7
2377181.5	4.16	18.70	6.97	- 1.97	-15.35	+ 3.85	170.78	26.09	90.74	18 24.6
2377182.5	4.13	18.86	6.85	- 1.84	-14.73	+ 3.62	171.33	26.17	81.76	19 01.4
2377183.5	4.09	19.02	6.72	- 1.70	-14.10	+ 3.39	171.88	26.26	72.78	19 38.2
2377184.5	4.06	19.18	6.59	- 1.56	-13.46	+ 3.16	172.44	26.35	63.82	20 14.9
2377185.5	4.03	19.33	6.44	- 1.42	-12.81	+ 2.93	172.99	26.45	54.87	20 51.6
2377186.5	4.00	19.48	6.28	- 1.26	-12.15	+ 2.70	173.54	26.56	45.93	21 28.3
2377187.5	3.97	19.63	6.11	- 1.11	-11.48	+ 2.47	174.10	26.67	36.99	22 04.9
2377188.5	3.94	19.77	5.94	- 0.95	-10.79	+ 2.24	174.66	26.79	28.07	22 41.4
2377189.5	3.91	19.90	5.75	- 0.78	-10.10	+ 2.00	175.21	26.91	19.15	23 18.0
2377190.5	3.89	20.04	5.56	- 0.62	- 9.40	+ 1.77	175.77	27.03	10.25	23 54.5
2377191.5	3.86	20.16	5.35	- 0.44	- 8.69	+ 1.54	176.33	27.16	1.35	.. ..
2377192.5	3.84	20.29	5.14	- 0.27	- 7.97	+ 1.30	176.89	27.30	352.45	0 30.9
2377193.5	3.82	20.40	4.92	- 0.09	- 7.24	+ 1.07	177.45	27.44	343.57	1 07.4
2377194.5	3.79	20.51	4.70	+ 0.09	- 6.51	+ 0.83	178.01	27.58	334.69	1 43.8
2377195.5	3.78	20.62	4.47	+ 0.28	- 5.76	+ 0.60	178.58	27.72	325.82	2 20.2
2377196.5	3.76	20.72	4.23	+ 0.46	- 5.01	+ 0.36	179.14	27.87	316.95	2 56.5
2377197.5	3.74	20.81	3.99	+ 0.65	- 4.26	+ 0.12	179.70	28.02	308.09	3 32.9
2377198.5	3.73	20.89	3.74	+ 0.84	- 3.50	- 0.11	180.27	28.17	299.23	4 09.2
2377199.5	3.71	20.97	3.49	+ 1.03	- 2.73	- 0.35	180.84	28.33	290.38	4 45.5
2377200.5	3.70	21.04	3.24	+ 1.21	- 1.96	- 0.59	181.40	28.48	281.53	5 21.8
2377201.5	3.69	21.11	2.98	+ 1.40	- 1.19	- 0.83	181.97	28.63	272.68	5 58.1
2377202.5	3.68	21.17	2.72	+ 1.59	- 0.42	- 1.06	182.54	28.79	263.83	6 34.4
2377203.5	3.67	21.22	2.46	+ 1.78	+ 0.36	- 1.30	183.11	28.94	254.98	7 10.6
2377204.5	3.66	21.26	2.20	+ 1.97	+ 1.14	- 1.54	183.68	29.10	246.14	7 46.9
2377205.5	3.66	21.29	1.94	+ 2.15	+ 1.92	- 1.78	184.26	29.25	237.29	8 23.2
2377206.5	3.65	21.32	1.68	+ 2.34	+ 2.70	- 2.02	184.83	29.40	228.45	8 59.5
2377207.5	3.65	21.34	1.42	+ 2.52	+ 3.49	- 2.26	185.40	29.56	219.60	9 35.8
2377208.5	3.65	21.35	1.17	+ 2.70	+ 4.27	- 2.50	185.98	29.70	210.75	10 12.1
2377209.5	3.65	21.36	0.91	+ 2.87	+ 5.05	- 2.74	186.55	29.85	201.90	10 48.4
2377210.5	3.65	21.35	0.66	+ 3.05	+ 5.83	- 2.98	187.13	29.99	193.04	11 24.7
2377211.5	3.65	21.34	0.41	+ 3.22	+ 6.60	- 3.22	187.71	30.14	184.18	12 01.0
2377212.5	3.65	21.32	0.16	+ 3.38	+ 7.37	- 3.46	188.29	30.27	175.32	12 37.4
2377213.5	3.65	21.30	359.92	+ 3.54	+ 8.14	- 3.70	188.87	30.41	166.45	13 13.8
2377214.5	3.66	21.27	359.69	+ 3.70	+ 8.91	- 3.94	189.45	30.54	157.58	13 50.2
2377215.5	3.67	21.23	359.46	+ 3.85	+ 9.67	- 4.18	190.03	30.66	148.70	14 26.6
2377216.5	3.67	21.18	359.23	+ 3.99	+10.42	- 4.42	190.61	30.79	139.81	15 03.1
2377217.5	3.68	21.13	359.02	+ 4.13	+11.17	- 4.66	191.20	30.90	130.92	15 39.6
2377218.5	3.69	21.07	358.81	+ 4.26	+11.92	- 4.90	191.78	31.02	122.01	16 16.1
2377219.5	3.71	21.01	358.61	+ 4.39	+12.65	- 5.14	192.37	31.12	113.10	16 52.7
2377220.5	3.72	20.94	358.42	+ 4.51	+13.38	- 5.38	192.95	31.23	104.18	17 29.3
2377221.5	3.73	20.86	358.23	+ 4.63	+14.10	- 5.62	193.54	31.32	95.26	18 05.9
2377222.5	3.75	20.78	358.06	+ 4.73	+14.81	- 5.86	194.13	31.42	86.32	18 42.6
2377223.5	3.76	20.69	357.90	+ 4.83	+15.52	- 6.10	194.72	31.50	77.37	19 19.4
2377224.5	3.78	20.60	357.74	+ 4.93	+16.21	- 6.34	195.30	31.58	68.41	19 56.2
2377225.5	3.80	20.50	357.60	+ 5.01	+16.90	- 6.58	195.90	31.66	59.44	20 33.0
2377226.5	3.82	20.40	357.47	+ 5.09	+17.58	- 6.82	196.49	31.72	50.46	21 09.9
2377227.5	3.84	20.30	357.35	+ 5.17	+18.24	- 7.06	197.08	31.78	41.47	21 46.8
2377228.5	3.86	20.19	357.24	+ 5.23	+18.90	- 7.30	197.67	31.84	32.47	22 23.8
2377229.5	3.88	20.08	357.14	+ 5.29	+19.55	- 7.54	198.27	31.89	23.45	23 00.8
2377230.5	3.90	19.96	357.05	+ 5.34	+20.18	- 7.78	198.86	31.93	14.42	23 37.9

Julian Day	Light- time m	Diameter "	A_E+180° °	D_S °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2377980.5	3.50	22.23	80.80	-20.03	-25.60	-20.73	237.74	340.01	299.75	4 07.2
2377981.5	3.47	22.40	80.77	-19.99	-24.91	-20.88	238.37	340.02	290.68	4 44.4
2377982.5	3.45	22.57	80.72	-19.94	-24.21	-21.03	239.00	340.04	281.62	5 21.6
2377983.5	3.42	22.74	80.66	-19.90	-23.49	-21.18	239.63	340.07	272.58	5 58.7
2377984.5	3.40	22.90	80.59	-19.86	-22.76	-21.32	240.27	340.10	263.55	6 35.7
2377985.5	3.38	23.06	80.51	-19.82	-22.01	-21.46	240.90	340.15	254.53	7 12.7
2377986.5	3.35	23.21	80.41	-19.78	-21.24	-21.60	241.53	340.20	245.53	7 49.6
2377987.5	3.33	23.36	80.29	-19.74	-20.46	-21.73	242.17	340.26	236.54	8 26.5
2377988.5	3.31	23.51	80.16	-19.70	-19.67	-21.86	242.80	340.32	227.56	9 03.3
2377989.5	3.29	23.65	80.02	-19.67	-18.86	-21.99	243.43	340.39	218.60	9 40.0
2377990.5	3.27	23.78	79.87	-19.64	-18.04	-22.12	244.07	340.47	209.65	10 16.7
2377991.5	3.26	23.91	79.70	-19.60	-17.20	-22.24	244.70	340.56	200.71	10 53.3
2377992.5	3.24	24.03	79.53	-19.57	-16.35	-22.36	245.34	340.65	191.79	11 29.9
2377993.5	3.22	24.15	79.34	-19.54	-15.49	-22.48	245.97	340.75	182.87	12 06.5
2377994.5	3.21	24.26	79.14	-19.51	-14.61	-22.60	246.60	340.86	173.97	12 43.0
2377995.5	3.20	24.36	78.93	-19.49	-13.72	-22.71	247.24	340.97	165.07	13 19.4
2377996.5	3.18	24.45	78.71	-19.47	-12.83	-22.82	247.87	341.08	156.19	13 55.9
2377997.5	3.17	24.54	78.48	-19.44	-11.92	-22.93	248.51	341.21	147.31	14 32.2
2377998.5	3.16	24.62	78.24	-19.42	-11.00	-23.03	249.14	341.33	138.44	15 08.6
2377999.5	3.15	24.69	77.99	-19.41	-10.08	-23.13	249.78	341.47	129.58	15 44.9
2378000.5	3.15	24.75	77.74	-19.39	-9.14	-23.23	250.41	341.60	120.73	16 21.2
2378001.5	3.14	24.80	77.48	-19.38	-8.20	-23.33	251.05	341.74	111.88	16 57.5
2378002.5	3.13	24.85	77.22	-19.37	-7.25	-23.42	251.68	341.89	103.04	17 33.7
2378003.5	3.13	24.88	76.95	-19.36	-6.29	-23.51	252.31	342.04	94.20	18 09.9
2378004.5	3.13	24.91	76.67	-19.35	-5.33	-23.60	252.95	342.19	85.37	18 46.1
2378005.5	3.12	24.93	76.39	-19.35	-4.37	-23.68	253.58	342.34	76.54	19 22.3
2378006.5	3.12	24.94	76.11	-19.34	-3.40	-23.76	254.22	342.50	67.72	19 58.5
2378007.5	3.12	24.94	75.83	-19.34	-2.43	-23.84	254.85	342.66	58.89	20 34.7
2378008.5	3.12	24.92	75.54	-19.35	-1.45	-23.91	255.48	342.82	50.07	21 10.9
2378009.5	3.13	24.90	75.25	-19.35	-0.48	-23.98	256.12	342.98	41.25	21 47.0
2378010.5	3.13	24.88	74.97	-19.36	+0.50	-24.05	256.75	343.14	32.43	22 23.2
2378011.5	3.13	24.84	74.68	-19.37	+1.48	-24.12	257.39	343.30	23.60	22 59.4
2378012.5	3.14	24.79	74.40	-19.38	+2.45	-24.18	258.02	343.46	14.78	23 35.6
2378013.5	3.15	24.73	74.12	-19.40	+3.42	-24.24	258.65	343.62	5.95	.. ..
2378014.5	3.16	24.67	73.84	-19.42	+4.39	-24.29	259.29	343.78	357.12	0 11.8
2378015.5	3.17	24.59	73.56	-19.44	+5.36	-24.34	259.92	343.94	348.28	0 48.0
2378016.5	3.18	24.51	73.29	-19.46	+6.32	-24.39	260.55	344.09	339.44	1 24.3
2378017.5	3.19	24.41	73.03	-19.49	+7.28	-24.44	261.18	344.25	330.59	2 00.6
2378018.5	3.20	24.31	72.77	-19.52	+8.23	-24.48	261.82	344.39	321.74	2 36.9
2378019.5	3.22	24.20	72.52	-19.55	+9.17	-24.52	262.45	344.54	312.88	3 13.2
2378020.5	3.23	24.09	72.28	-19.58	+10.11	-24.56	263.08	344.68	304.01	3 49.6
2378021.5	3.25	23.96	72.05	-19.62	+11.04	-24.59	263.71	344.82	295.13	4 26.0
2378022.5	3.27	23.83	71.82	-19.66	+11.95	-24.62	264.34	344.95	286.24	5 02.5
2378023.5	3.29	23.69	71.61	-19.70	+12.86	-24.65	264.97	345.08	277.35	5 39.0
2378024.5	3.31	23.55	71.40	-19.75	+13.76	-24.67	265.60	345.20	268.44	6 15.6
2378025.5	3.33	23.40	71.21	-19.80	+14.64	-24.69	266.23	345.31	259.52	6 52.2
2378026.5	3.35	23.24	71.03	-19.85	+15.52	-24.71	266.86	345.42	250.58	7 28.8
2378027.5	3.37	23.08	70.86	-19.90	+16.38	-24.73	267.49	345.53	241.64	8 05.5
2378028.5	3.40	22.92	70.70	-19.96	+17.23	-24.74	268.12	345.62	232.68	8 42.3
2378029.5	3.42	22.75	70.55	-20.01	+18.07	-24.75	268.75	345.71	223.72	9 19.1
2378030.5	3.45	22.57	70.42	-20.07	+18.89	-24.75	269.38	345.79	214.73	9 56.0
2378031.5	3.48	22.39	70.30	-20.14	+19.71	-24.75	270.01	345.86	205.74	10 32.9
2378032.5	3.50	22.21	70.20	-20.20	+20.50	-24.75	270.63	345.93	196.73	11 09.9
2378033.5	3.53	22.03	70.10	-20.27	+21.29	-24.75	271.26	345.99	187.71	11 46.9
2378034.5	3.56	21.84	70.02	-20.34	+22.06	-24.74	271.89	346.04	178.67	12 24.0
2378035.5	3.60	21.65	69.95	-20.41	+22.81	-24.73	272.51	346.08	169.62	13 01.2
2378036.5	3.63	21.46	69.90	-20.49	+23.56	-24.71	273.14	346.12	160.56	13 38.4
2378037.5	3.66	21.26	69.86	-20.56	+24.28	-24.69	273.77	346.15	151.48	14 15.7
2378038.5	3.70	21.07	69.84	-20.64	+25.00	-24.67	274.39	346.17	142.39	14 53.0
2378039.5	3.73	20.87	69.83	-20.72	+25.69	-24.65	275.02	346.18	133.29	15 30.4
2378040.5	3.77	20.67	69.83	-20.80	+26.38	-24.62	275.64	346.18	124.17	16 07.9

Julian Day	Light- time	Diameter	A_E+180°	D_E	A_S-A_E	D_S	L_S	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2378780.5	4.23	18.42	153.34	-9.76	-22.86	-19.32	307.78	322.14	140.60	15 00.1
2378781.5	4.20	18.52	153.23	-9.85	-22.15	-19.17	308.36	322.11	131.61	15 36.9
2378782.5	4.18	18.62	153.10	-9.95	-21.43	-19.00	308.95	322.08	122.63	16 13.7
2378783.5	4.16	18.72	152.96	-10.06	-20.70	-18.84	309.53	322.05	113.67	16 50.5
2378784.5	4.14	18.82	152.81	-10.17	-19.96	-18.68	310.11	322.02	104.72	17 27.1
2378785.5	4.12	18.91	152.65	-10.29	-19.21	-18.51	310.69	321.99	95.78	18 03.8
2378786.5	4.10	18.99	152.47	-10.42	-18.45	-18.34	311.27	321.95	86.85	18 40.3
2378787.5	4.08	19.07	152.28	-10.55	-17.68	-18.17	311.85	321.92	77.94	19 16.9
2378788.5	4.06	19.15	152.08	-10.69	-16.90	-18.00	312.43	321.88	69.03	19 53.3
2378789.5	4.05	19.22	151.87	-10.83	-16.10	-17.83	313.00	321.84	60.14	20 29.8
2378790.5	4.04	19.29	151.64	-10.98	-15.30	-17.66	313.58	321.80	51.26	21 06.2
2378791.5	4.02	19.35	151.41	-11.13	-14.50	-17.48	314.15	321.76	42.39	21 42.5
2378792.5	4.01	19.41	151.17	-11.29	-13.68	-17.30	314.73	321.72	33.53	22 18.8
2378793.5	4.00	19.46	150.91	-11.46	-12.86	-17.13	315.30	321.67	24.68	22 55.1
2378794.5	3.99	19.50	150.65	-11.62	-12.02	-16.95	315.87	321.63	15.83	23 31.3
2378795.5	3.98	19.54	150.38	-11.80	-11.19	-16.77	316.45	321.59	7.00	.. ..
2378796.5	3.98	19.57	150.10	-11.97	-10.34	-16.59	317.02	321.55	358.17	0 07.5
2378797.5	3.97	19.59	149.81	-12.15	-9.49	-16.40	317.59	321.51	349.35	0 43.7
2378798.5	3.97	19.61	149.52	-12.33	-8.64	-16.22	318.15	321.46	340.54	1 19.8
2378799.5	3.97	19.62	149.22	-12.51	-7.78	-16.03	318.72	321.42	331.73	1 55.9
2378800.5	3.97	19.62	148.92	-12.70	-6.92	-15.85	319.29	321.38	322.92	2 32.0
2378801.5	3.97	19.62	148.61	-12.89	-6.06	-15.66	319.85	321.34	314.13	3 08.1
2378802.5	3.97	19.60	148.29	-13.08	-5.19	-15.47	320.42	321.31	305.33	3 44.2
2378803.5	3.97	19.58	147.98	-13.26	-4.32	-15.28	320.98	321.27	296.54	4 20.2
2378804.5	3.98	19.56	147.66	-13.45	-3.46	-15.09	321.54	321.23	287.75	4 56.2
2378805.5	3.99	19.52	147.33	-13.64	-2.59	-14.90	322.11	321.20	278.96	5 32.3
2378806.5	4.00	19.48	147.01	-13.83	-1.72	-14.71	322.67	321.17	270.17	6 08.3
2378807.5	4.01	19.43	146.69	-14.02	-0.85	-14.52	323.23	321.14	261.38	6 44.3
2378808.5	4.02	19.38	146.37	-14.21	+0.01	-14.32	323.79	321.11	252.60	7 20.4
2378809.5	4.03	19.32	146.05	-14.40	+0.87	-14.13	324.34	321.08	243.81	7 56.4
2378810.5	4.04	19.25	145.73	-14.58	+1.72	-13.93	324.90	321.05	235.01	8 32.5
2378811.5	4.06	19.17	145.41	-14.77	+2.58	-13.73	325.46	321.03	226.22	9 08.5
2378812.5	4.08	19.09	145.10	-14.95	+3.42	-13.54	326.01	321.01	217.42	9 44.6
2378813.5	4.10	19.00	144.79	-15.12	+4.26	-13.34	326.57	320.99	208.61	10 20.7
2378814.5	4.12	18.90	144.49	-15.30	+5.10	-13.14	327.12	320.97	199.80	10 56.9
2378815.5	4.14	18.80	144.19	-15.47	+5.92	-12.94	327.67	320.95	190.99	11 33.0
2378816.5	4.16	18.69	143.90	-15.63	+6.74	-12.74	328.22	320.93	182.16	12 09.2
2378817.5	4.19	18.58	143.62	-15.80	+7.55	-12.54	328.77	320.92	173.33	12 45.5
2378818.5	4.22	18.46	143.34	-15.95	+8.34	-12.33	329.32	320.90	164.49	13 21.7
2378819.5	4.24	18.34	143.08	-16.11	+9.13	-12.13	329.87	320.89	155.64	13 58.0
2378820.5	4.27	18.21	142.82	-16.26	+9.91	-11.93	330.42	320.88	146.79	14 34.4
2378821.5	4.31	18.08	142.57	-16.40	+10.67	-11.72	330.96	320.87	137.92	15 10.8
2378822.5	4.34	17.94	142.33	-16.54	+11.43	-11.52	331.51	320.86	129.04	15 47.2
2378823.5	4.37	17.80	142.11	-16.67	+12.17	-11.32	332.05	320.86	120.15	16 23.7
2378824.5	4.41	17.66	141.89	-16.80	+12.90	-11.11	332.60	320.85	111.25	17 00.3
2378825.5	4.44	17.52	141.69	-16.92	+13.61	-10.90	333.14	320.84	102.33	17 36.9
2378826.5	4.48	17.37	141.50	-17.04	+14.32	-10.70	333.68	320.84	93.41	18 13.5
2378827.5	4.52	17.22	141.32	-17.15	+15.01	-10.49	334.22	320.83	84.47	18 50.2
2378828.5	4.56	17.06	141.15	-17.25	+15.68	-10.28	334.76	320.83	75.52	19 27.0
2378829.5	4.60	16.91	140.99	-17.35	+16.34	-10.07	335.30	320.83	66.56	20 03.8
2378830.5	4.65	16.75	140.85	-17.45	+16.99	-9.87	335.84	320.82	57.59	20 40.6
2378831.5	4.69	16.59	140.72	-17.53	+17.62	-9.66	336.38	320.82	48.60	21 17.6
2378832.5	4.74	16.43	140.60	-17.62	+18.24	-9.45	336.91	320.82	39.60	21 54.5
2378833.5	4.78	16.27	140.49	-17.69	+18.85	-9.24	337.45	320.81	30.58	22 31.6
2378834.5	4.83	16.11	140.40	-17.76	+19.44	-9.03	337.98	320.81	21.55	23 08.7
2378835.5	4.88	15.95	140.32	-17.83	+20.01	-8.82	338.52	320.80	12.51	23 45.8
2378836.5	4.93	15.79	140.26	-17.88	+20.57	-8.61	339.05	320.80	3.46	.. ..
2378837.5	4.98	15.62	140.20	-17.94	+21.12	-8.40	339.58	320.80	354.39	0 23.0
2378838.5	5.03	15.46	140.16	-17.98	+21.65	-8.19	340.11	320.79	345.31	1 00.3
2378839.5	5.09	15.30	140.13	-18.03	+22.17	-7.98	340.64	320.79	336.22	1 37.6
2378840.5	5.14	15.14	140.12	-18.06	+22.67	-7.77	341.17	320.78	327.11	2 15.0

PHYSICAL EPHEMERIS OF MARS, 1802-1803

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Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2379555.5	5.42	14.36	197.72	+ 7.20	-21.68	- 1.82	355.64	340.51	237.19	8 23.8
2379556.5	5.39	14.45	197.60	+ 7.09	-21.10	- 1.61	356.15	340.42	228.22	9 00.6
2379557.5	5.35	14.54	197.46	+ 6.97	-20.50	- 1.40	356.65	340.33	219.26	9 37.3
2379558.5	5.32	14.62	197.31	+ 6.85	-19.90	- 1.19	357.15	340.22	210.31	10 14.0
2379559.5	5.29	14.71	197.15	+ 6.72	-19.28	- 0.98	357.65	340.11	201.37	10 50.7
2379560.5	5.26	14.79	196.97	+ 6.58	-18.65	- 0.77	358.15	339.99	192.44	11 27.2
2379561.5	5.23	14.87	196.78	+ 6.44	-18.01	- 0.56	358.65	339.86	183.53	12 03.8
2379562.5	5.21	14.95	196.59	+ 6.30	-17.35	- 0.35	359.15	339.73	174.63	12 40.3
2379563.5	5.18	15.02	196.37	+ 6.15	-16.69	- 0.15	359.65	339.59	165.74	13 16.7
2379564.5	5.16	15.09	196.15	+ 5.99	-16.02	+ 0.06	0.15	339.44	156.86	13 53.1
2379565.5	5.14	15.16	195.92	+ 5.83	-15.33	+ 0.27	0.65	339.28	147.99	14 29.4
2379566.5	5.11	15.22	195.67	+ 5.67	-14.64	+ 0.48	1.14	339.12	139.13	15 05.7
2379567.5	5.09	15.28	195.42	+ 5.50	-13.93	+ 0.69	1.64	338.95	130.28	15 42.0
2379568.5	5.08	15.34	195.15	+ 5.33	-13.22	+ 0.89	2.13	338.77	121.44	16 18.2
2379569.5	5.06	15.39	194.88	+ 5.15	-12.50	+ 1.10	2.62	338.59	112.61	16 54.4
2379570.5	5.04	15.43	194.60	+ 4.97	-11.76	+ 1.30	3.12	338.41	103.79	17 30.5
2379571.5	5.03	15.48	194.30	+ 4.79	-11.02	+ 1.51	3.61	338.22	94.98	18 06.7
2379572.5	5.02	15.51	194.00	+ 4.60	-10.28	+ 1.72	4.10	338.02	86.17	18 42.7
2379573.5	5.01	15.54	193.70	+ 4.41	- 9.53	+ 1.92	4.59	337.82	77.38	19 18.8
2379574.5	5.00	15.57	193.38	+ 4.22	- 8.77	+ 2.13	5.08	337.62	68.59	19 54.8
2379575.5	4.99	15.59	193.06	+ 4.02	- 8.00	+ 2.33	5.57	337.41	59.80	20 30.8
2379576.5	4.99	15.61	192.73	+ 3.83	- 7.23	+ 2.53	6.06	337.20	51.02	21 06.8
2379577.5	4.98	15.62	192.40	+ 3.63	- 6.45	+ 2.74	6.55	336.99	42.24	21 42.8
2379578.5	4.98	15.63	192.07	+ 3.43	- 5.67	+ 2.94	7.03	336.77	33.47	22 18.7
2379579.5	4.98	15.63	191.73	+ 3.24	- 4.89	+ 3.14	7.52	336.56	24.70	22 54.7
2379580.5	4.98	15.62	191.39	+ 3.04	- 4.11	+ 3.34	8.00	336.34	15.94	23 30.6
2379581.5	4.99	15.61	191.04	+ 2.84	- 3.32	+ 3.54	8.49	336.13	7.17	.. ..
2379582.5	4.99	15.60	190.69	+ 2.64	- 2.53	+ 3.74	8.97	335.91	358.41	0 06.5
2379583.5	5.00	15.58	190.35	+ 2.44	- 1.75	+ 3.94	9.46	335.69	349.65	0 42.4
2379584.5	5.01	15.55	190.00	+ 2.25	- 0.96	+ 4.14	9.94	335.48	340.88	1 18.4
2379585.5	5.02	15.52	189.66	+ 2.06	- 0.17	+ 4.34	10.42	335.27	332.12	1 54.3
2379586.5	5.03	15.48	189.31	+ 1.87	+ 0.61	+ 4.54	10.90	335.06	323.35	2 30.3
2379587.5	5.04	15.43	188.97	+ 1.68	+ 1.39	+ 4.74	11.38	334.85	314.58	3 06.2
2379588.5	5.06	15.39	188.63	+ 1.49	+ 2.17	+ 4.94	11.86	334.64	305.81	3 42.2
2379589.5	5.08	15.33	188.30	+ 1.31	+ 2.94	+ 5.13	12.34	334.44	297.03	4 18.2
2379590.5	5.10	15.27	187.97	+ 1.13	+ 3.71	+ 5.33	12.82	334.24	288.25	4 54.2
2379591.5	5.12	15.21	187.64	+ 0.96	+ 4.48	+ 5.53	13.30	334.05	279.46	5 30.2
2379592.5	5.14	15.14	187.32	+ 0.79	+ 5.23	+ 5.72	13.78	333.86	270.67	6 06.3
2379593.5	5.17	15.07	187.01	+ 0.62	+ 5.98	+ 5.92	14.25	333.67	261.87	6 42.4
2379594.5	5.19	14.99	186.70	+ 0.46	+ 6.73	+ 6.11	14.73	333.49	253.06	7 18.5
2379595.5	5.22	14.91	186.40	+ 0.31	+ 7.46	+ 6.30	15.20	333.32	244.24	7 54.7
2379596.5	5.25	14.82	186.11	+ 0.16	+ 8.19	+ 6.50	15.68	333.15	235.42	8 30.9
2379597.5	5.28	14.74	185.83	+ 0.01	+ 8.91	+ 6.69	16.15	332.99	226.59	9 07.1
2379598.5	5.32	14.64	185.55	- 0.13	+ 9.62	+ 6.88	16.63	332.83	217.75	9 43.4
2379599.5	5.35	14.55	185.29	- 0.26	+10.32	+ 7.07	17.10	332.68	208.89	10 19.7
2379600.5	5.39	14.45	185.03	- 0.39	+11.01	+ 7.26	17.57	332.54	200.03	10 56.0
2379601.5	5.42	14.35	184.78	- 0.51	+11.70	+ 7.45	18.04	332.40	191.16	11 32.4
2379602.5	5.46	14.25	184.55	- 0.62	+12.37	+ 7.64	18.52	332.27	182.28	12 08.9
2379603.5	5.50	14.14	184.32	- 0.73	+13.03	+ 7.83	18.99	332.14	173.39	12 45.4
2379604.5	5.55	14.03	184.11	- 0.83	+13.68	+ 8.02	19.46	332.03	164.48	13 21.9
2379605.5	5.59	13.92	183.90	- 0.93	+14.32	+ 8.20	19.92	331.91	155.57	13 58.5
2379606.5	5.64	13.81	183.71	- 1.01	+14.94	+ 8.39	20.39	331.81	146.64	14 35.2
2379607.5	5.68	13.70	183.53	- 1.10	+15.56	+ 8.57	20.86	331.71	137.71	15 11.8
2379608.5	5.73	13.58	183.36	- 1.17	+16.17	+ 8.76	21.33	331.62	128.76	15 48.6
2379609.5	5.78	13.47	183.20	- 1.24	+16.76	+ 8.94	21.80	331.54	119.80	16 25.4
2379610.5	5.83	13.35	183.05	- 1.30	+17.34	+ 9.13	22.26	331.46	110.82	17 02.2
2379611.5	5.88	13.23	182.92	- 1.35	+17.91	+ 9.31	22.73	331.39	101.84	17 39.1
2379612.5	5.94	13.12	182.79	- 1.40	+18.47	+ 9.49	23.19	331.32	92.84	18 16.1
2379613.5	5.99	13.00	182.68	- 1.44	+19.01	+ 9.67	23.66	331.27	83.83	18 53.1
2379614.5	6.04	12.88	182.58	- 1.48	+19.55	+ 9.85	24.12	331.22	74.81	19 30.1
2379615.5	6.10	12.76	182.49	- 1.51	+20.07	+10.03	24.59	331.17	65.77	20 07.2

Julian Day	Light- time m	Diameter "	A_s+180° °	D_E °	A_s-A_E °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2380320.5	6.27	12.42	233.67	+18.46	-23.28	+13.13	32.86	4.00	73.39	19 35.7
2380321.5	6.22	12.51	233.54	+18.39	-22.71	+13.29	33.31	3.92	64.42	20 12.5
2380322.5	6.18	12.60	233.40	+18.31	-22.13	+13.46	33.76	3.83	55.47	20 49.1
2380323.5	6.14	12.69	233.24	+18.23	-21.54	+13.62	34.22	3.73	46.53	21 25.8
2380324.5	6.10	12.77	233.07	+18.15	-20.93	+13.78	34.67	3.62	37.61	22 02.3
2380325.5	6.05	12.86	232.88	+18.06	-20.31	+13.94	35.12	3.51	28.69	22 38.8
2380326.5	6.02	12.94	232.68	+17.97	-19.67	+14.10	35.58	3.38	19.79	23 15.3
2380327.5	5.98	13.02	232.47	+17.88	-19.02	+14.26	36.03	3.25	10.91	23 51.7
2380328.5	5.94	13.10	232.24	+17.79	-18.36	+14.41	36.48	3.10	2.03	.. ..
2380329.5	5.91	13.18	232.01	+17.69	-17.69	+14.57	36.93	2.95	353.17	0 28.0
2380330.5	5.87	13.26	231.76	+17.59	-17.00	+14.73	37.38	2.79	344.32	1 04.3
2380331.5	5.84	13.33	231.49	+17.48	-16.30	+14.88	37.83	2.62	335.48	1 40.5
2380332.5	5.81	13.40	231.22	+17.38	-15.59	+15.03	38.28	2.45	326.66	2 16.7
2380333.5	5.78	13.46	230.93	+17.27	-14.86	+15.19	38.73	2.26	317.84	2 52.9
2380334.5	5.75	13.53	230.64	+17.16	-14.13	+15.34	39.18	2.07	309.04	3 29.0
2380335.5	5.73	13.59	230.33	+17.04	-13.38	+15.49	39.63	1.88	300.24	4 05.0
2380336.5	5.70	13.65	230.01	+16.93	-12.63	+15.64	40.08	1.67	291.46	4 41.0
2380337.5	5.68	13.70	229.69	+16.81	-11.86	+15.79	40.53	1.46	282.68	5 17.0
2380338.5	5.66	13.75	229.35	+16.69	-11.09	+15.94	40.98	1.24	273.91	5 52.9
2380339.5	5.64	13.80	229.01	+16.57	-10.30	+16.08	41.42	1.02	265.15	6 28.8
2380340.5	5.62	13.84	228.66	+16.45	- 9.51	+16.23	41.87	0.79	256.40	7 04.7
2380341.5	5.61	13.88	228.30	+16.33	- 8.71	+16.37	42.32	0.56	247.66	7 40.6
2380342.5	5.60	13.91	227.93	+16.20	- 7.90	+16.52	42.76	0.32	238.92	8 16.4
2380343.5	5.58	13.94	227.56	+16.08	- 7.09	+16.66	43.21	0.08	230.18	8 52.2
2380344.5	5.57	13.97	227.18	+15.95	- 6.27	+16.80	43.66	359.83	221.46	9 27.9
2380345.5	5.57	13.99	226.80	+15.82	- 5.45	+16.94	44.10	359.58	212.73	10 03.7
2380346.5	5.56	14.00	226.41	+15.70	- 4.62	+17.08	44.55	359.33	204.01	10 39.4
2380347.5	5.55	14.01	226.03	+15.57	- 3.79	+17.22	44.99	359.07	195.29	11 15.2
2380348.5	5.55	14.02	225.63	+15.44	- 2.95	+17.36	45.44	358.81	186.58	11 50.9
2380349.5	5.55	14.02	225.24	+15.31	- 2.12	+17.49	45.88	358.56	177.86	12 26.6
2380350.5	5.55	14.02	224.85	+15.19	- 1.28	+17.63	46.33	358.30	169.15	13 02.4
2380351.5	5.56	14.01	224.45	+15.06	- 0.44	+17.76	46.77	358.04	160.43	13 38.1
2380352.5	5.56	14.00	224.06	+14.94	+ 0.39	+17.90	47.21	357.78	151.72	14 13.8
2380353.5	5.57	13.98	223.67	+14.82	+ 1.23	+18.03	47.66	357.52	143.00	14 49.6
2380354.5	5.58	13.96	223.28	+14.69	+ 2.06	+18.16	48.10	357.26	134.28	15 25.3
2380355.5	5.59	13.93	222.89	+14.58	+ 2.90	+18.29	48.54	357.00	125.55	16 01.1
2380356.5	5.60	13.90	222.51	+14.46	+ 3.73	+18.42	48.99	356.75	116.82	16 36.9
2380357.5	5.61	13.87	222.13	+14.34	+ 4.55	+18.54	49.43	356.50	108.09	17 12.7
2380358.5	5.63	13.83	221.76	+14.23	+ 5.37	+18.67	49.87	356.25	99.35	17 48.6
2380359.5	5.65	13.78	221.40	+14.12	+ 6.18	+18.80	50.31	356.00	90.60	18 24.4
2380360.5	5.67	13.73	221.04	+14.02	+ 6.99	+18.92	50.75	355.76	81.85	19 00.3
2380361.5	5.69	13.68	220.68	+13.91	+ 7.79	+19.04	51.20	355.53	73.09	19 36.3
2380362.5	5.71	13.62	220.34	+13.81	+ 8.59	+19.17	51.64	355.30	64.32	20 12.3
2380363.5	5.74	13.56	220.00	+13.72	+ 9.37	+19.29	52.08	355.07	55.54	20 48.3
2380364.5	5.77	13.50	219.67	+13.62	+10.15	+19.41	52.52	354.85	46.76	21 24.3
2380365.5	5.79	13.43	219.35	+13.54	+10.92	+19.52	52.96	354.64	37.96	22 00.4
2380366.5	5.82	13.36	219.04	+13.45	+11.68	+19.64	53.40	354.43	29.16	22 36.6
2380367.5	5.86	13.29	218.74	+13.37	+12.43	+19.76	53.84	354.23	20.34	23 12.8
2380368.5	5.89	13.22	218.45	+13.30	+13.17	+19.87	54.28	354.04	11.52	23 49.0
2380369.5	5.93	13.14	218.17	+13.22	+13.90	+19.99	54.72	353.85	2.68	.. ..
2380370.5	5.96	13.06	217.90	+13.16	+14.63	+20.10	55.16	353.67	353.83	0 25.3
2380371.5	6.00	12.97	217.65	+13.10	+15.34	+20.21	55.60	353.50	344.97	1 01.6
2380372.5	6.04	12.89	217.40	+13.04	+16.03	+20.32	56.04	353.34	336.10	1 38.0
2380373.5	6.08	12.80	217.17	+12.98	+16.72	+20.43	56.48	353.18	327.22	2 14.5
2380374.5	6.12	12.71	216.94	+12.94	+17.40	+20.54	56.91	353.03	318.32	2 51.0
2380375.5	6.17	12.62	216.73	+12.89	+18.07	+20.64	57.35	352.89	309.41	3 27.5
2380376.5	6.21	12.53	216.53	+12.85	+18.72	+20.75	57.79	352.76	300.49	4 04.1
2380377.5	6.26	12.44	216.35	+12.82	+19.36	+20.85	58.23	352.64	291.56	4 40.7
2380378.5	6.31	12.34	216.17	+12.79	+19.99	+20.96	58.67	352.52	282.61	5 17.5
2380379.5	6.36	12.25	216.01	+12.77	+20.61	+21.06	59.11	352.42	273.65	5 54.2
2380380.5	6.41	12.15	215.86	+12.75	+21.21	+21.16	59.55	352.32	264.68	6 31.0

Julian Day	Light- time m	Diameter "	A_S+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2381085.5	6.46	12.04	268.91	+22.41	-23.51	+22.74	67.42	23.96	270.45	6	07.3
2381086.5	6.41	12.14	268.76	+22.39	-22.90	+22.82	67.86	23.88	261.51	6	44.0
2381087.5	6.36	12.23	268.60	+22.36	-22.27	+22.89	68.29	23.81	252.57	7	20.6
2381088.5	6.31	12.33	268.42	+22.34	-21.62	+22.97	68.73	23.72	243.66	7	57.2
2381089.5	6.27	12.42	268.23	+22.32	-20.96	+23.04	69.17	23.63	234.75	8	33.7
2381090.5	6.22	12.51	268.02	+22.30	-20.29	+23.11	69.60	23.53	225.86	9	10.1
2381091.5	6.18	12.60	267.80	+22.28	-19.60	+23.18	70.04	23.42	216.98	9	46.5
2381092.5	6.13	12.69	267.57	+22.26	-18.90	+23.24	70.48	23.31	208.12	10	22.8
2381093.5	6.09	12.78	267.32	+22.24	-18.18	+23.31	70.91	23.19	199.27	10	59.1
2381094.5	6.05	12.87	267.06	+22.22	-17.45	+23.37	71.35	23.06	190.43	11	35.3
2381095.5	6.01	12.95	266.79	+22.20	-16.71	+23.44	71.79	22.93	181.61	12	11.5
2381096.5	5.97	13.03	266.50	+22.18	-15.95	+23.50	72.22	22.79	172.79	12	47.6
2381097.5	5.94	13.11	266.21	+22.16	-15.18	+23.56	72.66	22.64	163.99	13	23.7
2381098.5	5.90	13.19	265.90	+22.15	-14.40	+23.62	73.10	22.49	155.20	13	59.7
2381099.5	5.87	13.26	265.58	+22.13	-13.60	+23.67	73.53	22.33	146.42	14	35.6
2381100.5	5.84	13.33	265.24	+22.11	-12.80	+23.73	73.97	22.16	137.65	15	11.6
2381101.5	5.81	13.40	264.90	+22.10	-11.98	+23.78	74.41	21.99	128.89	15	47.4
2381102.5	5.78	13.46	264.55	+22.08	-11.16	+23.84	74.84	21.81	120.15	16	23.3
2381103.5	5.76	13.52	264.19	+22.06	-10.32	+23.89	75.28	21.63	111.41	16	59.1
2381104.5	5.73	13.58	263.82	+22.05	-9.48	+23.94	75.72	21.44	102.67	17	34.9
2381105.5	5.71	13.63	263.44	+22.03	-8.62	+23.99	76.16	21.25	93.95	18	10.6
2381106.5	5.69	13.68	263.05	+22.02	-7.76	+24.03	76.59	21.05	85.23	18	46.3
2381107.5	5.67	13.73	262.66	+22.00	-6.89	+24.08	77.03	20.85	76.52	19	22.0
2381108.5	5.65	13.77	262.26	+21.99	-6.01	+24.12	77.47	20.64	67.82	19	57.7
2381109.5	5.64	13.81	261.85	+21.98	-5.13	+24.17	77.91	20.43	59.12	20	33.3
2381110.5	5.62	13.84	261.44	+21.96	-4.24	+24.21	78.34	20.21	50.43	21	08.9
2381111.5	5.61	13.87	261.02	+21.95	-3.35	+24.25	78.78	20.00	41.74	21	44.5
2381112.5	5.60	13.90	260.61	+21.94	-2.45	+24.29	79.22	19.78	33.05	22	20.1
2381113.5	5.59	13.92	260.18	+21.92	-1.55	+24.32	79.66	19.55	24.37	22	55.7
2381114.5	5.59	13.93	259.76	+21.91	-0.65	+24.36	80.09	19.33	15.69	23	31.3
2381115.5	5.58	13.94	259.33	+21.90	+0.26	+24.39	80.53	19.10	7.00	..	..
2381116.5	5.58	13.95	258.91	+21.88	+1.17	+24.43	80.97	18.87	358.32	0	06.9
2381117.5	5.58	13.95	258.48	+21.87	+2.07	+24.46	81.41	18.64	349.64	0	42.5
2381118.5	5.58	13.95	258.06	+21.86	+2.98	+24.49	81.85	18.41	340.95	1	18.1
2381119.5	5.59	13.94	257.64	+21.85	+3.88	+24.51	82.29	18.19	332.27	1	53.7
2381120.5	5.59	13.92	257.22	+21.84	+4.78	+24.54	82.72	17.96	323.58	2	29.3
2381121.5	5.60	13.91	256.80	+21.83	+5.68	+24.56	83.16	17.73	314.88	3	04.9
2381122.5	5.61	13.89	256.39	+21.82	+6.57	+24.59	83.60	17.50	306.18	3	40.6
2381123.5	5.62	13.86	255.99	+21.81	+7.46	+24.61	84.04	17.28	297.48	4	16.3
2381124.5	5.63	13.83	255.59	+21.81	+8.34	+24.63	84.48	17.06	288.77	4	52.0
2381125.5	5.64	13.79	255.20	+21.80	+9.21	+24.65	84.92	16.84	280.05	5	27.8
2381126.5	5.66	13.76	254.81	+21.80	+10.08	+24.67	85.36	16.63	271.32	6	03.5
2381127.5	5.68	13.71	254.43	+21.79	+10.94	+24.68	85.80	16.42	262.58	6	39.4
2381128.5	5.70	13.67	254.07	+21.79	+11.80	+24.70	86.24	16.21	253.84	7	15.2
2381129.5	5.72	13.62	253.71	+21.79	+12.64	+24.71	86.68	16.01	245.09	7	51.1
2381130.5	5.74	13.56	253.36	+21.78	+13.47	+24.72	87.12	15.81	236.32	8	27.1
2381131.5	5.76	13.51	253.02	+21.78	+14.30	+24.73	87.56	15.62	227.55	9	03.1
2381132.5	5.79	13.45	252.69	+21.79	+15.11	+24.74	88.00	15.43	218.76	9	39.1
2381133.5	5.82	13.38	252.37	+21.79	+15.91	+24.74	88.44	15.25	209.96	10	15.2
2381134.5	5.85	13.32	252.07	+21.79	+16.71	+24.75	88.89	15.07	201.15	10	51.3
2381135.5	5.88	13.25	251.77	+21.80	+17.49	+24.75	89.33	14.90	192.33	11	27.5
2381136.5	5.91	13.18	251.49	+21.80	+18.26	+24.75	89.77	14.74	183.50	12	03.8
2381137.5	5.94	13.10	251.22	+21.81	+19.01	+24.75	90.21	14.59	174.65	12	40.1
2381138.5	5.98	13.03	250.96	+21.82	+19.76	+24.75	90.65	14.44	165.79	13	16.5
2381139.5	6.01	12.95	250.72	+21.84	+20.49	+24.75	91.10	14.30	156.92	13	52.9
2381140.5	6.05	12.87	250.49	+21.85	+21.21	+24.74	91.54	14.16	148.03	14	29.4
2381141.5	6.09	12.79	250.27	+21.86	+21.91	+24.74	91.98	14.03	139.13	15	05.9
2381142.5	6.13	12.71	250.07	+21.88	+22.60	+24.73	92.43	13.91	130.22	15	42.5
2381143.5	6.17	12.62	249.88	+21.90	+23.28	+24.72	92.87	13.80	121.29	16	19.1
2381144.5	6.21	12.54	249.70	+21.92	+23.95	+24.71	93.31	13.70	112.35	16	55.9
2381145.5	6.25	12.45	249.54	+21.94	+24.60	+24.70	93.76	13.60	103.40	17	32.6

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_s °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2381850.5	6.19	12.58	306.18	+18.20	-23.20	+24.19	101.82	37.04	105.60	17 23.7
2381851.5	6.13	12.70	306.09	+18.23	-22.62	+24.15	102.27	37.02	96.60	18 00.6
2381852.5	6.08	12.81	305.98	+18.25	-22.02	+24.11	102.72	37.00	87.61	18 37.4
2381853.5	6.02	12.93	305.86	+18.29	-21.41	+24.06	103.18	36.98	78.64	19 14.2
2381854.5	5.97	13.04	305.73	+18.32	-20.78	+24.01	103.63	36.95	69.68	19 50.9
2381855.5	5.92	13.15	305.58	+18.37	-20.14	+23.96	104.08	36.93	60.73	20 27.6
2381856.5	5.87	13.27	305.42	+18.41	-19.49	+23.91	104.53	36.90	51.79	21 04.2
2381857.5	5.82	13.38	305.25	+18.46	-18.83	+23.86	104.98	36.86	42.87	21 40.7
2381858.5	5.77	13.49	305.06	+18.52	-18.15	+23.80	105.44	36.83	33.96	22 17.2
2381859.5	5.72	13.60	304.87	+18.57	-17.46	+23.75	105.89	36.79	25.06	22 53.7
2381860.5	5.68	13.71	304.66	+18.64	-16.76	+23.69	106.35	36.74	16.17	23 30.1
2381861.5	5.64	13.81	304.43	+18.70	-16.04	+23.63	106.80	36.70	7.30	.. ..
2381862.5	5.59	13.91	304.20	+18.77	-15.32	+23.57	107.26	36.65	358.43	0 06.4
2381863.5	5.55	14.02	303.95	+18.85	-14.58	+23.51	107.71	36.60	349.58	0 42.7
2381864.5	5.51	14.12	303.69	+18.92	-13.83	+23.44	108.17	36.55	340.74	1 19.0
2381865.5	5.48	14.21	303.42	+19.00	-13.07	+23.38	108.62	36.49	331.91	1 55.2
2381866.5	5.44	14.31	303.14	+19.09	-12.29	+23.31	109.08	36.43	323.09	2 31.3
2381867.5	5.41	14.40	302.85	+19.18	-11.51	+23.24	109.54	36.37	314.28	3 07.4
2381868.5	5.37	14.49	302.55	+19.27	-10.72	+23.17	110.00	36.30	305.48	3 43.5
2381869.5	5.34	14.57	302.24	+19.36	- 9.91	+23.10	110.45	36.23	296.69	4 19.6
2381870.5	5.31	14.65	301.92	+19.46	- 9.10	+23.02	110.91	36.16	287.91	4 55.5
2381871.5	5.28	14.73	301.59	+19.55	- 8.28	+22.95	111.37	36.08	279.14	5 31.5
2381872.5	5.26	14.81	301.25	+19.66	- 7.45	+22.87	111.83	36.00	270.38	6 07.4
2381873.5	5.23	14.88	300.91	+19.76	- 6.61	+22.79	112.29	35.92	261.62	6 43.3
2381874.5	5.21	14.94	300.55	+19.87	- 5.77	+22.71	112.75	35.84	252.87	7 19.2
2381875.5	5.19	15.00	300.19	+19.97	- 4.91	+22.63	113.21	35.75	244.13	7 55.0
2381876.5	5.17	15.06	299.83	+20.08	- 4.05	+22.55	113.68	35.66	235.39	8 30.8
2381877.5	5.15	15.12	299.46	+20.19	- 3.19	+22.46	114.14	35.57	226.66	9 06.6
2381878.5	5.13	15.16	299.08	+20.31	- 2.32	+22.38	114.60	35.47	217.94	9 42.4
2381879.5	5.12	15.21	298.70	+20.42	- 1.45	+22.29	115.06	35.37	209.21	10 18.1
2381880.5	5.11	15.25	298.31	+20.53	- 0.57	+22.20	115.53	35.27	200.49	10 53.9
2381881.5	5.09	15.28	297.92	+20.65	+ 0.31	+22.11	115.99	35.17	191.78	11 29.6
2381882.5	5.09	15.31	297.53	+20.77	+ 1.19	+22.01	116.46	35.06	183.06	12 05.3
2381883.5	5.08	15.33	297.14	+20.88	+ 2.07	+21.92	116.92	34.95	174.35	12 41.0
2381884.5	5.07	15.35	296.75	+21.00	+ 2.96	+21.82	117.39	34.84	165.63	13 16.8
2381885.5	5.07	15.36	296.36	+21.11	+ 3.84	+21.73	117.86	34.73	156.92	13 52.5
2381886.5	5.06	15.37	295.97	+21.23	+ 4.72	+21.63	118.32	34.62	148.20	14 28.2
2381887.5	5.06	15.37	295.58	+21.34	+ 5.60	+21.53	118.79	34.51	139.48	15 04.0
2381888.5	5.06	15.37	295.19	+21.46	+ 6.48	+21.42	119.26	34.40	130.76	15 39.7
2381889.5	5.07	15.36	294.81	+21.57	+ 7.35	+21.32	119.73	34.28	122.03	16 15.5
2381890.5	5.07	15.35	294.43	+21.68	+ 8.22	+21.22	120.20	34.17	113.30	16 51.3
2381891.5	5.08	15.33	294.06	+21.79	+ 9.09	+21.11	120.67	34.06	104.57	17 27.2
2381892.5	5.08	15.31	293.69	+21.90	+ 9.95	+21.00	121.14	33.94	95.82	18 03.0
2381893.5	5.09	15.28	293.33	+22.01	+10.80	+20.89	121.61	33.83	87.08	18 38.9
2381894.5	5.10	15.25	292.97	+22.12	+11.64	+20.78	122.08	33.72	78.32	19 14.8
2381895.5	5.12	15.22	292.63	+22.22	+12.48	+20.67	122.55	33.61	69.55	19 50.8
2381896.5	5.13	15.18	292.29	+22.33	+13.31	+20.55	123.03	33.50	60.78	20 26.8
2381897.5	5.14	15.13	291.96	+22.43	+14.12	+20.43	123.50	33.40	52.00	21 02.9
2381898.5	5.16	15.08	291.64	+22.53	+14.93	+20.32	123.97	33.29	43.20	21 38.9
2381899.5	5.18	15.03	291.33	+22.62	+15.73	+20.20	124.45	33.19	34.40	22 15.1
2381900.5	5.20	14.97	291.04	+22.72	+16.52	+20.08	124.93	33.09	25.59	22 51.3
2381901.5	5.22	14.91	290.75	+22.81	+17.30	+19.96	125.40	33.00	16.76	23 27.5
2381902.5	5.24	14.85	290.47	+22.90	+18.06	+19.83	125.88	32.91	7.92	.. ..
2381903.5	5.27	14.78	290.21	+22.99	+18.82	+19.71	126.36	32.82	359.07	0 03.8
2381904.5	5.29	14.71	289.96	+23.07	+19.56	+19.58	126.83	32.73	350.21	0 40.2
2381905.5	5.32	14.64	289.72	+23.15	+20.29	+19.45	127.31	32.65	341.33	1 16.6
2381906.5	5.34	14.57	289.49	+23.23	+21.00	+19.32	127.79	32.57	332.45	1 53.0
2381907.5	5.37	14.49	289.28	+23.31	+21.71	+19.19	128.27	32.50	323.55	2 29.5
2381908.5	5.40	14.41	289.08	+23.39	+22.39	+19.06	128.75	32.43	314.63	3 06.1
2381909.5	5.43	14.33	288.89	+23.46	+23.07	+18.92	129.23	32.36	305.70	3 42.7
2381910.5	5.47	14.24	288.72	+23.53	+23.73	+18.79	129.72	32.30	296.76	4 19.4

PHYSICAL EPHEMERIS OF MARS, 1811

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Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_r °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2382625.5	5.22	14.91	347.76	+ 4.68	-21.63	+14.41	143.52	34.43	205.53	10	33.9
2382626.5	5.17	15.06	347.74	+ 4.73	-21.13	+14.24	144.03	34.45	196.45	11	11.1
2382627.5	5.12	15.21	347.71	+ 4.79	-20.61	+14.06	144.53	34.47	187.39	11	48.3
2382628.5	5.07	15.37	347.67	+ 4.85	-20.09	+13.88	145.04	34.49	178.33	12	25.4
2382629.5	5.02	15.52	347.62	+ 4.92	-19.55	+13.70	145.54	34.52	169.29	13	02.5
2382630.5	4.97	15.67	347.56	+ 5.00	-19.00	+13.52	146.05	34.55	160.25	13	39.5
2382631.5	4.92	15.82	347.48	+ 5.08	-18.44	+13.34	146.56	34.59	151.23	14	16.5
2382632.5	4.87	15.97	347.40	+ 5.17	-17.86	+13.16	147.07	34.63	142.22	14	53.5
2382633.5	4.83	16.12	347.30	+ 5.27	-17.28	+12.97	147.58	34.68	133.22	15	30.4
2382634.5	4.78	16.27	347.20	+ 5.37	-16.69	+12.79	148.09	34.73	124.22	16	07.2
2382635.5	4.74	16.42	347.08	+ 5.48	-16.08	+12.60	148.60	34.78	115.24	16	44.0
2382636.5	4.70	16.57	346.95	+ 5.59	-15.46	+12.41	149.11	34.83	106.27	17	20.8
2382637.5	4.66	16.71	346.81	+ 5.71	-14.84	+12.22	149.63	34.89	97.32	17	57.5
2382638.5	4.62	16.85	346.67	+ 5.84	-14.20	+12.03	150.14	34.96	88.37	18	34.2
2382639.5	4.58	16.99	346.51	+ 5.97	-13.55	+11.84	150.66	35.03	79.43	19	10.8
2382640.5	4.54	17.13	346.34	+ 6.11	-12.89	+11.65	151.17	35.10	70.50	19	47.4
2382641.5	4.51	17.26	346.16	+ 6.25	-12.22	+11.45	151.69	35.17	61.58	20	24.0
2382642.5	4.47	17.40	345.97	+ 6.40	-11.55	+11.26	152.21	35.25	52.67	21	00.5
2382643.5	4.44	17.53	345.77	+ 6.55	-10.86	+11.06	152.72	35.32	43.77	21	37.0
2382644.5	4.41	17.65	345.56	+ 6.71	-10.16	+10.86	153.24	35.41	34.88	22	13.4
2382645.5	4.38	17.77	345.34	+ 6.87	- 9.45	+10.67	153.76	35.49	25.99	22	49.8
2382646.5	4.35	17.89	345.11	+ 7.04	- 8.74	+10.47	154.29	35.58	17.12	23	26.2
2382647.5	4.32	18.00	344.88	+ 7.21	- 8.01	+10.27	154.81	35.67	8.25	..	..
2382648.5	4.30	18.11	344.64	+ 7.38	- 7.28	+10.06	155.33	35.76	359.39	0	02.5
2382649.5	4.27	18.22	344.39	+ 7.56	- 6.54	+ 9.86	155.85	35.85	350.54	0	38.8
2382650.5	4.25	18.32	344.13	+ 7.74	- 5.79	+ 9.66	156.38	35.94	341.70	1	15.1
2382651.5	4.23	18.41	343.86	+ 7.93	- 5.03	+ 9.45	156.90	36.04	332.86	1	51.3
2382652.5	4.21	18.50	343.59	+ 8.12	- 4.27	+ 9.25	157.43	36.13	324.02	2	27.5
2382653.5	4.19	18.58	343.32	+ 8.31	- 3.51	+ 9.04	157.96	36.23	315.20	3	03.7
2382654.5	4.17	18.66	343.04	+ 8.50	- 2.73	+ 8.83	158.49	36.33	306.37	3	39.9
2382655.5	4.16	18.73	342.75	+ 8.69	- 1.96	+ 8.62	159.02	36.42	297.55	4	16.1
2382656.5	4.14	18.80	342.47	+ 8.89	- 1.18	+ 8.41	159.55	36.52	288.74	4	52.2
2382657.5	4.13	18.86	342.18	+ 9.08	- 0.39	+ 8.20	160.08	36.62	279.92	5	28.3
2382658.5	4.12	18.91	341.88	+ 9.28	+ 0.39	+ 7.99	160.61	36.71	271.11	6	04.5
2382659.5	4.11	18.95	341.59	+ 9.47	+ 1.18	+ 7.78	161.14	36.80	262.30	6	40.6
2382660.5	4.10	18.99	341.29	+ 9.67	+ 1.97	+ 7.56	161.68	36.90	253.49	7	16.7
2382661.5	4.09	19.02	341.00	+ 9.86	+ 2.76	+ 7.35	162.21	36.99	244.68	7	52.9
2382662.5	4.09	19.05	340.70	+10.05	+ 3.55	+ 7.13	162.75	37.08	235.87	8	29.0
2382663.5	4.08	19.07	340.41	+10.24	+ 4.34	+ 6.92	163.28	37.17	227.05	9	05.1
2382664.5	4.08	19.08	340.12	+10.43	+ 5.12	+ 6.70	163.82	37.25	218.24	9	41.3
2382665.5	4.08	19.09	339.83	+10.62	+ 5.91	+ 6.48	164.36	37.34	209.42	10	17.5
2382666.5	4.08	19.09	339.54	+10.80	+ 6.69	+ 6.26	164.90	37.42	200.60	10	53.6
2382667.5	4.08	19.08	339.26	+10.99	+ 7.47	+ 6.04	165.44	37.50	191.77	11	29.8
2382668.5	4.08	19.07	338.98	+11.16	+ 8.24	+ 5.82	165.98	37.58	182.94	12	06.1
2382669.5	4.09	19.05	338.71	+11.34	+ 9.01	+ 5.60	166.52	37.65	174.10	12	42.3
2382670.5	4.09	19.02	338.44	+11.51	+ 9.78	+ 5.38	167.07	37.72	165.26	13	18.6
2382671.5	4.10	18.99	338.18	+11.67	+10.54	+ 5.15	167.61	37.79	156.41	13	54.9
2382672.5	4.11	18.95	337.93	+11.84	+11.29	+ 4.93	168.15	37.86	147.55	14	31.2
2382673.5	4.12	18.91	337.68	+11.99	+12.03	+ 4.71	168.70	37.92	138.69	15	07.6
2382674.5	4.13	18.86	337.44	+12.14	+12.77	+ 4.48	169.25	37.98	129.82	15	44.0
2382675.5	4.14	18.81	337.21	+12.29	+13.50	+ 4.25	169.79	38.04	120.94	16	20.5
2382676.5	4.15	18.75	336.99	+12.43	+14.22	+ 4.03	170.34	38.10	112.05	16	56.9
2382677.5	4.17	18.68	336.78	+12.57	+14.94	+ 3.80	170.89	38.15	103.15	17	33.5
2382678.5	4.18	18.61	336.58	+12.70	+15.64	+ 3.57	171.44	38.20	94.24	18	10.1
2382679.5	4.20	18.54	336.38	+12.82	+16.34	+ 3.34	172.00	38.25	85.32	18	46.7
2382680.5	4.22	18.46	336.20	+12.94	+17.02	+ 3.11	172.55	38.29	76.39	19	23.3
2382681.5	4.24	18.38	336.03	+13.05	+17.70	+ 2.88	173.10	38.33	67.45	20	00.1
2382682.5	4.25	18.30	335.87	+13.16	+18.36	+ 2.65	173.66	38.37	58.49	20	36.8
2382683.5	4.28	18.21	335.72	+13.26	+19.02	+ 2.42	174.21	38.40	49.53	21	13.6
2382684.5	4.30	18.11	335.59	+13.35	+19.66	+ 2.19	174.77	38.44	40.55	21	50.5
2382685.5	4.32	18.02	335.46	+13.44	+20.29	+ 1.96	175.33	38.47	31.56	22	27.4

Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2383425.5	3.77	20.65	48.02	-15.58	-23.97	-10.64	206.17	359.59	59.19	20 34.5
2383426.5	3.74	20.84	48.04	-15.51	-23.42	-10.87	206.78	359.58	50.07	21 11.9
2383427.5	3.70	21.03	48.04	-15.43	-22.85	-11.10	207.39	359.58	40.97	21 49.2
2383428.5	3.67	21.22	48.03	-15.35	-22.27	-11.33	207.99	359.58	31.88	22 26.4
2383429.5	3.64	21.41	48.01	-15.27	-21.67	-11.56	208.60	359.60	22.80	23 03.6
2383430.5	3.60	21.60	47.98	-15.19	-21.06	-11.79	209.21	359.62	13.73	23 40.8
2383431.5	3.57	21.78	47.93	-15.10	-20.43	-12.02	209.82	359.65	4.68	.. ..
2383432.5	3.54	21.96	47.87	-15.01	-19.80	-12.24	210.43	359.69	355.64	0 17.9
2383433.5	3.52	22.14	47.80	-14.92	-19.14	-12.47	211.04	359.74	346.61	0 54.9
2383434.5	3.49	22.31	47.72	-14.82	-18.48	-12.69	211.65	359.79	337.59	1 31.9
2383435.5	3.46	22.48	47.62	-14.72	-17.80	-12.92	212.26	359.85	328.58	2 08.9
2383436.5	3.44	22.65	47.52	-14.62	-17.10	-13.14	212.88	359.92	319.59	2 45.8
2383437.5	3.41	22.81	47.40	-14.52	-16.40	-13.36	213.49	0.00	310.61	3 22.6
2383438.5	3.39	22.97	47.27	-14.42	-15.68	-13.58	214.10	0.09	301.63	3 59.4
2383439.5	3.37	23.12	47.13	-14.31	-14.95	-13.80	214.72	0.18	292.67	4 36.2
2383440.5	3.35	23.27	46.97	-14.21	-14.20	-14.01	215.33	0.28	283.72	5 12.9
2383441.5	3.32	23.41	46.81	-14.10	-13.44	-14.23	215.95	0.39	274.78	5 49.6
2383442.5	3.31	23.55	46.64	-13.99	-12.68	-14.44	216.57	0.50	265.85	6 26.2
2383443.5	3.29	23.68	46.46	-13.88	-11.90	-14.66	217.18	0.62	256.93	7 02.8
2383444.5	3.27	23.80	46.27	-13.77	-11.10	-14.87	217.80	0.75	248.01	7 39.3
2383445.5	3.25	23.92	46.07	-13.66	-10.30	-15.08	218.42	0.88	239.11	8 15.8
2383446.5	3.24	24.03	45.86	-13.54	-9.49	-15.29	219.04	1.02	230.21	8 52.3
2383447.5	3.23	24.13	45.65	-13.43	-8.67	-15.50	219.66	1.17	221.32	9 28.7
2383448.5	3.21	24.23	45.42	-13.32	-7.84	-15.71	220.28	1.32	212.44	10 05.2
2383449.5	3.20	24.31	45.19	-13.21	-7.00	-15.91	220.90	1.47	203.56	10 41.6
2383450.5	3.19	24.39	44.96	-13.10	-6.15	-16.12	221.52	1.63	194.69	11 17.9
2383451.5	3.18	24.46	44.72	-12.99	-5.30	-16.32	222.15	1.79	185.83	11 54.3
2383452.5	3.17	24.52	44.47	-12.88	-4.44	-16.52	222.77	1.96	176.97	12 30.6
2383453.5	3.17	24.57	44.22	-12.78	-3.58	-16.72	223.39	2.13	168.11	13 06.9
2383454.5	3.16	24.61	43.97	-12.67	-2.71	-16.91	224.02	2.30	159.25	13 43.2
2383455.5	3.16	24.65	43.72	-12.57	-1.83	-17.11	224.64	2.47	150.40	14 19.5
2383456.5	3.16	24.67	43.46	-12.47	-0.96	-17.30	225.26	2.64	141.55	14 55.8
2383457.5	3.15	24.69	43.21	-12.38	-0.08	-17.50	225.89	2.81	132.70	15 32.1
2383458.5	3.15	24.69	42.95	-12.28	+0.80	-17.69	226.52	2.99	123.85	16 08.4
2383459.5	3.15	24.69	42.70	-12.19	+1.69	-17.87	227.14	3.16	114.99	16 44.7
2383460.5	3.15	24.68	42.44	-12.10	+2.57	-18.06	227.77	3.33	106.14	17 21.1
2383461.5	3.16	24.65	42.19	-12.02	+3.45	-18.25	228.40	3.50	97.28	17 57.4
2383462.5	3.16	24.62	41.94	-11.94	+4.33	-18.43	229.02	3.67	88.42	18 33.8
2383463.5	3.17	24.58	41.70	-11.87	+5.21	-18.61	229.65	3.83	79.55	19 10.1
2383464.5	3.17	24.54	41.46	-11.80	+6.08	-18.79	230.28	4.00	70.68	19 46.5
2383465.5	3.18	24.48	41.23	-11.73	+6.96	-18.96	230.91	4.16	61.81	20 22.9
2383466.5	3.19	24.41	41.00	-11.67	+7.83	-19.14	231.54	4.31	52.93	20 59.4
2383467.5	3.20	24.34	40.77	-11.61	+8.69	-19.31	232.17	4.46	44.04	21 35.9
2383468.5	3.21	24.26	40.56	-11.56	+9.55	-19.48	232.80	4.61	35.15	22 12.4
2383469.5	3.22	24.17	40.35	-11.51	+10.40	-19.65	233.43	4.75	26.24	22 48.9
2383470.5	3.23	24.08	40.15	-11.47	+11.25	-19.82	234.06	4.89	17.33	23 25.5
2383471.5	3.25	23.98	39.95	-11.44	+12.09	-19.98	234.69	5.02	8.42	.. ..
2383472.5	3.26	23.87	39.77	-11.41	+12.93	-20.14	235.32	5.15	359.49	0 02.1
2383473.5	3.28	23.75	39.59	-11.38	+13.75	-20.30	235.95	5.26	350.55	0 38.7
2383474.5	3.29	23.63	39.43	-11.36	+14.57	-20.46	236.58	5.38	341.61	1 15.4
2383475.5	3.31	23.50	39.27	-11.35	+15.38	-20.61	237.21	5.48	332.65	1 52.2
2383476.5	3.33	23.37	39.12	-11.34	+16.19	-20.76	237.85	5.58	323.69	2 29.0
2383477.5	3.35	23.23	38.99	-11.34	+16.98	-20.91	238.48	5.67	314.71	3 05.8
2383478.5	3.37	23.08	38.86	-11.35	+17.76	-21.06	239.11	5.75	305.72	3 42.7
2383479.5	3.39	22.93	38.75	-11.36	+18.54	-21.20	239.75	5.83	296.72	4 19.6
2383480.5	3.42	22.78	38.65	-11.37	+19.30	-21.35	240.38	5.89	287.71	4 56.6
2383481.5	3.44	22.62	38.56	-11.39	+20.05	-21.48	241.01	5.95	278.68	5 33.6
2383482.5	3.47	22.46	38.48	-11.42	+20.80	-21.62	241.65	6.00	269.65	6 10.7
2383483.5	3.49	22.30	38.42	-11.46	+21.53	-21.76	242.28	6.04	260.60	6 47.9
2383484.5	3.52	22.13	38.36	-11.50	+22.25	-21.89	242.91	6.08	251.54	7 25.1
2383485.5	3.54	21.96	38.32	-11.54	+22.96	-22.02	243.55	6.10	242.46	8 02.3

Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2384235.5	3.80	20.49	129.39	-16.25	-24.91	-24.06	283.20	322.53	160.31	13 39.3
2384236.5	3.78	20.61	129.30	-16.29	-24.15	-23.99	283.82	322.54	151.29	14 16.2
2384237.5	3.76	20.73	129.20	-16.35	-23.37	-23.92	284.43	322.55	142.29	14 53.1
2384238.5	3.73	20.85	129.08	-16.41	-22.59	-23.85	285.05	322.57	133.31	15 30.0
2384239.5	3.71	20.96	128.95	-16.47	-21.79	-23.78	285.66	322.58	124.33	16 06.7
2384240.5	3.70	21.07	128.81	-16.54	-20.98	-23.70	286.28	322.60	115.37	16 43.4
2384241.5	3.68	21.17	128.65	-16.62	-20.16	-23.62	286.89	322.63	106.43	17 20.1
2384242.5	3.66	21.27	128.48	-16.70	-19.33	-23.54	287.50	322.65	97.49	17 56.7
2384243.5	3.64	21.36	128.30	-16.79	-18.49	-23.45	288.11	322.68	88.57	18 33.3
2384244.5	3.63	21.45	128.10	-16.88	-17.63	-23.36	288.73	322.70	79.66	19 09.8
2384245.5	3.61	21.54	127.90	-16.98	-16.77	-23.27	289.34	322.73	70.76	19 46.2
2384246.5	3.60	21.61	127.68	-17.08	-15.89	-23.18	289.95	322.77	61.88	20 22.6
2384247.5	3.59	21.68	127.45	-17.18	-15.01	-23.08	290.56	322.80	53.00	20 59.0
2384248.5	3.58	21.75	127.21	-17.30	-14.12	-22.98	291.16	322.84	44.14	21 35.3
2384249.5	3.57	21.80	126.95	-17.41	-13.21	-22.88	291.77	322.88	35.28	22 11.6
2384250.5	3.56	21.85	126.69	-17.53	-12.30	-22.78	292.38	322.92	26.44	22 47.8
2384251.5	3.56	21.90	126.42	-17.65	-11.39	-22.67	292.98	322.97	17.60	23 24.0
2384252.5	3.55	21.93	126.15	-17.78	-10.46	-22.56	293.59	323.01	8.77	.. ..
2384253.5	3.55	21.96	125.86	-17.91	-9.54	-22.45	294.19	323.06	359.95	0 00.2
2384254.5	3.54	21.98	125.57	-18.04	-8.60	-22.34	294.80	323.11	351.14	0 36.3
2384255.5	3.54	21.99	125.27	-18.17	-7.66	-22.22	295.40	323.17	342.33	1 12.5
2384256.5	3.54	21.99	124.97	-18.31	-6.72	-22.11	296.00	323.22	333.52	1 48.6
2384257.5	3.54	21.98	124.66	-18.45	-5.78	-21.99	296.61	323.28	324.72	2 24.6
2384258.5	3.54	21.97	124.35	-18.59	-4.83	-21.86	297.21	323.34	315.93	3 00.7
2384259.5	3.55	21.95	124.03	-18.73	-3.89	-21.74	297.81	323.40	307.13	3 36.8
2384260.5	3.55	21.92	123.71	-18.87	-2.94	-21.61	298.41	323.46	298.34	4 12.8
2384261.5	3.56	21.88	123.40	-19.02	-1.99	-21.48	299.00	323.53	289.55	4 48.9
2384262.5	3.57	21.83	123.08	-19.16	-1.05	-21.35	299.60	323.59	280.76	5 24.9
2384263.5	3.57	21.78	122.76	-19.31	-0.11	-21.22	300.20	323.66	271.96	6 01.0
2384264.5	3.59	21.71	122.44	-19.45	+0.83	-21.08	300.79	323.72	263.17	6 37.0
2384265.5	3.60	21.64	122.13	-19.60	+1.77	-20.94	301.39	323.79	254.37	7 13.1
2384266.5	3.61	21.56	121.82	-19.74	+2.70	-20.80	301.98	323.86	245.57	7 49.2
2384267.5	3.63	21.47	121.51	-19.88	+3.62	-20.66	302.58	323.93	236.77	8 25.3
2384268.5	3.64	21.38	121.20	-20.02	+4.54	-20.52	303.17	324.00	227.96	9 01.4
2384269.5	3.66	21.28	120.90	-20.16	+5.45	-20.37	303.76	324.06	219.15	9 37.5
2384270.5	3.68	21.17	120.61	-20.30	+6.35	-20.22	304.35	324.13	210.33	10 13.7
2384271.5	3.70	21.06	120.32	-20.44	+7.25	-20.07	304.94	324.20	201.51	10 49.9
2384272.5	3.72	20.93	120.04	-20.57	+8.14	-19.92	305.53	324.26	192.67	11 26.2
2384273.5	3.74	20.81	119.77	-20.70	+9.01	-19.77	306.12	324.33	183.83	12 02.4
2384274.5	3.77	20.67	119.51	-20.83	+9.88	-19.61	306.70	324.39	174.98	12 38.7
2384275.5	3.79	20.53	119.25	-20.96	+10.73	-19.46	307.29	324.45	166.12	13 15.1
2384276.5	3.82	20.39	119.01	-21.08	+11.57	-19.30	307.87	324.51	157.25	13 51.5
2384277.5	3.85	20.24	118.77	-21.21	+12.40	-19.14	308.46	324.57	148.37	14 27.9
2384278.5	3.88	20.09	118.55	-21.32	+13.22	-18.98	309.04	324.63	139.48	15 04.4
2384279.5	3.91	19.93	118.34	-21.44	+14.02	-18.81	309.63	324.68	130.58	15 41.0
2384280.5	3.94	19.77	118.14	-21.55	+14.81	-18.65	310.21	324.73	121.66	16 17.6
2384281.5	3.97	19.60	117.95	-21.66	+15.58	-18.48	310.79	324.78	112.73	16 54.3
2384282.5	4.01	19.43	117.78	-21.76	+16.34	-18.31	311.37	324.82	103.79	17 31.0
2384283.5	4.04	19.26	117.61	-21.86	+17.09	-18.15	311.95	324.86	94.84	18 07.8
2384284.5	4.08	19.09	117.47	-21.96	+17.82	-17.97	312.52	324.90	85.87	18 44.6
2384285.5	4.12	18.91	117.33	-22.05	+18.53	-17.80	313.10	324.94	76.88	19 21.5
2384286.5	4.16	18.73	117.21	-22.14	+19.23	-17.63	313.68	324.97	67.89	19 58.4
2384287.5	4.20	18.55	117.10	-22.23	+19.91	-17.45	314.25	324.99	58.88	20 35.5
2384288.5	4.24	18.37	117.01	-22.31	+20.58	-17.28	314.83	325.02	49.85	21 12.5
2384289.5	4.28	18.18	116.93	-22.39	+21.22	-17.10	315.40	325.03	40.81	21 49.7
2384290.5	4.32	18.00	116.87	-22.46	+21.86	-16.92	315.97	325.05	31.76	22 26.9
2384291.5	4.37	17.82	116.82	-22.53	+22.47	-16.74	316.54	325.06	22.69	23 04.2
2384292.5	4.41	17.63	116.78	-22.60	+23.08	-16.56	317.11	325.07	13.61	23 41.5
2384293.5	4.46	17.45	116.76	-22.66	+23.66	-16.37	317.68	325.07	4.51	.. ..
2384294.5	4.51	17.26	116.75	-22.72	+24.23	-16.19	318.25	325.07	355.40	0 18.9
2384295.5	4.56	17.08	116.75	-22.77	+24.78	-16.00	318.82	325.06	346.27	0 56.3

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_E °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2385015.5	5.08	15.33	182.52	+ 1.39	-23.58	- 9.41	337.03	331.92	202.59	10 45.8
2385016.5	5.05	15.43	182.45	+ 1.29	-23.00	- 9.20	337.56	331.87	193.57	11 22.8
2385017.5	5.01	15.53	182.36	+ 1.19	-22.41	- 8.99	338.10	331.81	184.56	11 59.8
2385018.5	4.98	15.62	182.25	+ 1.09	-21.81	- 8.78	338.63	331.74	175.56	12 36.6
2385019.5	4.95	15.72	182.13	+ 0.97	-21.20	- 8.57	339.16	331.67	166.58	13 13.5
2385020.5	4.92	15.81	182.00	+ 0.85	-20.58	- 8.35	339.70	331.59	157.61	13 50.2
2385021.5	4.90	15.90	181.86	+ 0.73	-19.94	- 8.14	340.23	331.50	148.65	14 27.0
2385022.5	4.87	15.99	181.71	+ 0.60	-19.30	- 7.93	340.76	331.41	139.70	15 03.6
2385023.5	4.84	16.07	181.54	+ 0.46	-18.64	- 7.72	341.29	331.31	130.77	15 40.2
2385024.5	4.82	16.15	181.36	+ 0.31	-17.97	- 7.51	341.81	331.20	121.84	16 16.8
2385025.5	4.80	16.23	181.17	+ 0.16	-17.29	- 7.30	342.34	331.09	112.93	16 53.3
2385026.5	4.78	16.30	180.97	0.00	-16.61	- 7.09	342.87	330.98	104.03	17 29.8
2385027.5	4.75	16.37	180.75	- 0.16	-15.91	- 6.87	343.39	330.85	95.14	18 06.2
2385028.5	4.74	16.44	180.53	- 0.32	-15.20	- 6.66	343.92	330.73	86.27	18 42.6
2385029.5	4.72	16.50	180.29	- 0.50	-14.48	- 6.45	344.44	330.59	77.40	19 18.9
2385030.5	4.70	16.56	180.04	- 0.67	-13.75	- 6.24	344.96	330.46	68.54	19 55.2
2385031.5	4.69	16.61	179.79	- 0.86	-13.02	- 6.02	345.48	330.31	59.69	20 31.5
2385032.5	4.67	16.66	179.52	- 1.04	-12.28	- 5.81	346.01	330.17	50.85	21 07.7
2385033.5	4.66	16.70	179.25	- 1.23	-11.53	- 5.60	346.53	330.02	42.02	21 43.9
2385034.5	4.65	16.74	178.97	- 1.42	-10.77	- 5.39	347.04	329.87	33.19	22 20.0
2385035.5	4.64	16.77	178.68	- 1.62	-10.00	- 5.17	347.56	329.71	24.38	22 56.2
2385036.5	4.63	16.80	178.38	- 1.82	- 9.23	- 4.96	348.08	329.55	15.57	23 32.3
2385037.5	4.63	16.82	178.08	- 2.02	- 8.46	- 4.75	348.60	329.39	6.77	.. ..
2385038.5	4.62	16.83	177.77	- 2.23	- 7.68	- 4.54	349.11	329.23	357.97	0 08.3
2385039.5	4.62	16.84	177.45	- 2.43	- 6.89	- 4.32	349.63	329.07	349.18	0 44.4
2385040.5	4.62	16.85	177.13	- 2.64	- 6.10	- 4.11	350.14	328.90	340.39	1 20.4
2385041.5	4.62	16.84	176.81	- 2.85	- 5.31	- 3.90	350.65	328.74	331.61	1 56.4
2385042.5	4.62	16.83	176.48	- 3.06	- 4.51	- 3.69	351.17	328.57	322.82	2 32.4
2385043.5	4.63	16.82	176.15	- 3.26	- 3.72	- 3.47	351.68	328.41	314.05	3 08.4
2385044.5	4.63	16.80	175.82	- 3.47	- 2.92	- 3.26	352.19	328.24	305.27	3 44.4
2385045.5	4.64	16.77	175.49	- 3.68	- 2.12	- 3.05	352.70	328.08	296.49	4 20.4
2385046.5	4.65	16.74	175.15	- 3.89	- 1.33	- 2.84	353.21	327.92	287.72	4 56.4
2385047.5	4.66	16.70	174.82	- 4.09	- 0.53	- 2.63	353.72	327.76	278.94	5 32.4
2385048.5	4.68	16.65	174.49	- 4.29	+ 0.26	- 2.42	354.22	327.60	270.16	6 08.4
2385049.5	4.69	16.60	174.16	- 4.49	+ 1.05	- 2.20	354.73	327.44	261.38	6 44.4
2385050.5	4.71	16.54	173.83	- 4.69	+ 1.84	- 1.99	355.23	327.29	252.59	7 20.4
2385051.5	4.72	16.48	173.51	- 4.88	+ 2.62	- 1.78	355.74	327.14	243.80	7 56.4
2385052.5	4.74	16.41	173.19	- 5.07	+ 3.40	- 1.57	356.24	326.99	235.01	8 32.5
2385053.5	4.76	16.34	172.87	- 5.26	+ 4.17	- 1.36	356.75	326.85	226.21	9 08.6
2385054.5	4.79	16.26	172.56	- 5.44	+ 4.94	- 1.15	357.25	326.71	217.41	9 44.7
2385055.5	4.81	16.18	172.26	- 5.62	+ 5.70	- 0.94	357.75	326.58	208.60	10 20.8
2385056.5	4.84	16.09	171.96	- 5.79	+ 6.45	- 0.73	358.25	326.45	199.78	10 57.0
2385057.5	4.87	15.99	171.67	- 5.96	+ 7.19	- 0.52	358.75	326.32	190.95	11 33.2
2385058.5	4.90	15.90	171.39	- 6.12	+ 7.93	- 0.31	359.25	326.20	182.12	12 09.4
2385059.5	4.93	15.80	171.12	- 6.27	+ 8.65	- 0.11	359.75	326.09	173.28	12 45.7
2385060.5	4.96	15.69	170.85	- 6.42	+ 9.37	+ 0.10	0.25	325.98	164.43	13 22.0
2385061.5	4.99	15.58	170.60	- 6.57	+10.07	+ 0.31	0.74	325.87	155.56	13 58.4
2385062.5	5.03	15.47	170.35	- 6.70	+10.77	+ 0.52	1.24	325.77	146.69	14 34.8
2385063.5	5.07	15.36	170.12	- 6.84	+11.46	+ 0.73	1.73	325.67	137.81	15 11.3
2385064.5	5.11	15.24	169.89	- 6.96	+12.13	+ 0.93	2.23	325.58	128.92	15 47.8
2385065.5	5.15	15.12	169.68	- 7.08	+12.80	+ 1.14	2.72	325.49	120.02	16 24.3
2385066.5	5.19	15.00	169.47	- 7.19	+13.45	+ 1.35	3.21	325.41	111.11	17 00.9
2385067.5	5.23	14.88	169.28	- 7.30	+14.09	+ 1.55	3.71	325.34	102.18	17 37.5
2385068.5	5.28	14.75	169.09	- 7.39	+14.72	+ 1.76	4.20	325.26	93.24	18 14.2
2385069.5	5.32	14.63	168.92	- 7.48	+15.34	+ 1.96	4.69	325.20	84.30	18 51.0
2385070.5	5.37	14.50	168.76	- 7.57	+15.94	+ 2.17	5.18	325.14	75.34	19 27.8
2385071.5	5.42	14.37	168.61	- 7.65	+16.53	+ 2.37	5.67	325.08	66.36	20 04.6
2385072.5	5.47	14.24	168.48	- 7.72	+17.12	+ 2.57	6.16	325.03	57.38	20 41.5
2385073.5	5.52	14.11	168.35	- 7.78	+17.68	+ 2.78	6.64	324.98	48.39	21 18.5
2385074.5	5.57	13.97	168.24	- 7.84	+18.24	+ 2.98	7.13	324.94	39.38	21 55.5
2385075.5	5.62	13.84	168.14	- 7.89	+18.78	+ 3.18	7.62	324.90	30.36	22 32.5

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_R °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2385785.5	6.04	12.90	220.07	+14.97	-23.05	+ 7.69	18.63	355.22	351.62	0 34.4
2385786.5	5.99	12.99	219.95	+14.88	-22.50	+ 7.88	19.10	355.14	342.64	1 11.2
2385787.5	5.95	13.08	219.83	+14.79	-21.93	+ 8.06	19.57	355.05	333.67	1 48.0
2385788.5	5.91	13.17	219.68	+14.70	-21.36	+ 8.25	20.04	354.96	324.71	2 24.7
2385789.5	5.87	13.25	219.53	+14.60	-20.76	+ 8.44	20.51	354.85	315.77	3 01.4
2385790.5	5.84	13.34	219.36	+14.49	-20.16	+ 8.62	20.98	354.74	306.84	3 38.0
2385791.5	5.80	13.42	219.17	+14.38	-19.54	+ 8.81	21.44	354.61	297.93	4 14.6
2385792.5	5.77	13.50	218.98	+14.27	-18.91	+ 8.99	21.91	354.48	289.02	4 51.1
2385793.5	5.73	13.58	218.77	+14.15	-18.27	+ 9.17	22.38	354.34	280.13	5 27.6
2385794.5	5.70	13.66	218.55	+14.03	-17.61	+ 9.36	22.84	354.19	271.25	6 04.0
2385795.5	5.67	13.73	218.31	+13.91	-16.95	+ 9.54	23.31	354.03	262.38	6 40.3
2385796.5	5.64	13.80	218.07	+13.78	-16.27	+ 9.72	23.77	353.87	253.53	7 16.6
2385797.5	5.61	13.87	217.81	+13.65	-15.58	+ 9.90	24.24	353.70	244.68	7 52.9
2385798.5	5.59	13.94	217.55	+13.51	-14.88	+10.08	24.70	353.52	235.85	8 29.1
2385799.5	5.56	14.00	217.27	+13.38	-14.16	+10.26	25.17	353.33	227.02	9 05.3
2385800.5	5.54	14.06	216.98	+13.23	-13.44	+10.43	25.63	353.13	218.21	9 41.4
2385801.5	5.52	14.11	216.68	+13.09	-12.71	+10.61	26.09	352.93	209.41	10 17.5
2385802.5	5.50	14.16	216.37	+12.94	-11.97	+10.79	26.55	352.72	200.61	10 53.5
2385803.5	5.48	14.21	216.06	+12.79	-11.21	+10.96	27.01	352.51	191.82	11 29.5
2385804.5	5.46	14.26	215.73	+12.64	-10.46	+11.14	27.47	352.29	183.05	12 05.5
2385805.5	5.45	14.29	215.40	+12.49	- 9.69	+11.31	27.93	352.06	174.27	12 41.4
2385806.5	5.43	14.33	215.06	+12.33	- 8.91	+11.48	28.39	351.83	165.51	13 17.4
2385807.5	5.42	14.36	214.71	+12.17	- 8.13	+11.66	28.85	351.59	156.75	13 53.3
2385808.5	5.41	14.39	214.36	+12.02	- 7.35	+11.83	29.31	351.36	148.00	14 29.1
2385809.5	5.40	14.41	214.00	+11.86	- 6.55	+12.00	29.77	351.11	139.25	15 05.0
2385810.5	5.40	14.42	213.64	+11.69	- 5.76	+12.17	30.23	350.87	130.51	15 40.8
2385811.5	5.39	14.43	213.27	+11.53	- 4.95	+12.34	30.68	350.62	121.77	16 16.6
2385812.5	5.39	14.44	212.90	+11.37	- 4.15	+12.51	31.14	350.37	113.03	16 52.5
2385813.5	5.39	14.44	212.53	+11.21	- 3.34	+12.67	31.60	350.11	104.29	17 28.3
2385814.5	5.39	14.44	212.16	+11.05	- 2.53	+12.84	32.05	349.86	95.56	18 04.1
2385815.5	5.39	14.43	211.78	+10.89	- 1.72	+13.00	32.51	349.61	86.82	18 39.9
2385816.5	5.40	14.42	211.41	+10.73	- 0.91	+13.17	32.96	349.35	78.09	19 15.7
2385817.5	5.41	14.40	211.03	+10.57	- 0.10	+13.33	33.42	349.10	69.35	19 51.5
2385818.5	5.42	14.37	210.66	+10.42	+ 0.70	+13.50	33.87	348.85	60.61	20 27.3
2385819.5	5.43	14.34	210.29	+10.26	+ 1.51	+13.66	34.33	348.60	51.87	21 03.2
2385820.5	5.44	14.31	209.92	+10.11	+ 2.31	+13.82	34.78	348.35	43.13	21 39.1
2385821.5	5.45	14.27	209.56	+ 9.96	+ 3.11	+13.98	35.23	348.10	34.38	22 14.9
2385822.5	5.47	14.23	209.20	+ 9.82	+ 3.91	+14.14	35.68	347.86	25.63	22 50.8
2385823.5	5.49	14.18	208.85	+ 9.68	+ 4.70	+14.30	36.14	347.62	16.87	23 26.8
2385824.5	5.51	14.13	208.50	+ 9.54	+ 5.49	+14.45	36.59	347.38	8.11	.. ..
2385825.5	5.53	14.08	208.16	+ 9.40	+ 6.27	+14.61	37.04	347.15	359.33	0 02.7
2385826.5	5.55	14.02	207.82	+ 9.27	+ 7.04	+14.76	37.49	346.93	350.56	0 38.7
2385827.5	5.58	13.95	207.49	+ 9.14	+ 7.80	+14.92	37.94	346.71	341.77	1 14.7
2385828.5	5.61	13.88	207.17	+ 9.02	+ 8.56	+15.07	38.39	346.49	332.97	1 50.8
2385829.5	5.64	13.81	206.86	+ 8.90	+ 9.31	+15.22	38.84	346.28	324.17	2 26.9
2385830.5	5.67	13.74	206.56	+ 8.79	+10.05	+15.38	39.29	346.08	315.36	3 03.0
2385831.5	5.70	13.66	206.26	+ 8.68	+10.79	+15.53	39.74	345.89	306.54	3 39.2
2385832.5	5.73	13.58	205.98	+ 8.58	+11.51	+15.68	40.19	345.70	297.71	4 15.4
2385833.5	5.77	13.50	205.71	+ 8.48	+12.23	+15.82	40.64	345.51	288.86	4 51.7
2385834.5	5.80	13.41	205.44	+ 8.38	+12.93	+15.97	41.08	345.34	280.01	5 28.0
2385835.5	5.84	13.32	205.19	+ 8.30	+13.62	+16.12	41.53	345.17	271.15	6 04.4
2385836.5	5.88	13.23	204.94	+ 8.21	+14.31	+16.26	41.98	345.01	262.27	6 40.8
2385837.5	5.92	13.14	204.71	+ 8.14	+14.98	+16.41	42.43	344.86	253.39	7 17.3
2385838.5	5.97	13.05	204.49	+ 8.07	+15.64	+16.55	42.87	344.71	244.49	7 53.8
2385839.5	6.01	12.95	204.28	+ 8.00	+16.29	+16.69	43.32	344.58	235.58	8 30.3
2385840.5	6.06	12.85	204.08	+ 7.94	+16.93	+16.84	43.76	344.45	226.66	9 06.9
2385841.5	6.10	12.75	203.90	+ 7.89	+17.56	+16.98	44.21	344.33	217.73	9 43.6
2385842.5	6.15	12.65	203.72	+ 7.84	+18.18	+17.12	44.66	344.21	208.78	10 20.3
2385843.5	6.20	12.55	203.56	+ 7.80	+18.78	+17.25	45.10	344.11	199.82	10 57.1
2385844.5	6.25	12.45	203.41	+ 7.76	+19.38	+17.39	45.55	344.01	190.85	11 33.9
2385845.5	6.30	12.35	203.27	+ 7.73	+19.96	+17.53	45.99	343.93	181.87	12 10.8

Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2386550.5	6.48	12.02	255.11	+21.79	-23.82	+19.79	53.96	16.82	188.82	11 42.2
2386551.5	6.43	12.11	254.97	+21.75	-23.22	+19.90	54.40	16.74	179.87	12 18.9
2386552.5	6.38	12.20	254.81	+21.70	-22.62	+20.02	54.84	16.66	170.93	12 55.5
2386553.5	6.33	12.29	254.64	+21.65	-22.00	+20.13	55.28	16.56	162.00	13 32.1
2386554.5	6.29	12.38	254.46	+21.60	-21.36	+20.24	55.71	16.47	153.09	14 08.6
2386555.5	6.24	12.47	254.26	+21.56	-20.71	+20.35	56.15	16.36	144.19	14 45.1
2386556.5	6.20	12.56	254.05	+21.51	-20.04	+20.46	56.59	16.24	135.30	15 21.5
2386557.5	6.16	12.65	253.83	+21.46	-19.36	+20.57	57.03	16.12	126.43	15 57.9
2386558.5	6.12	12.73	253.59	+21.40	-18.67	+20.67	57.47	15.99	117.57	16 34.2
2386559.5	6.08	12.81	253.34	+21.35	-17.96	+20.78	57.91	15.85	108.72	17 10.4
2386560.5	6.04	12.89	253.07	+21.30	-17.24	+20.88	58.35	15.70	99.89	17 46.6
2386561.5	6.00	12.97	252.80	+21.25	-16.51	+20.98	58.79	15.55	91.06	18 22.7
2386562.5	5.97	13.05	252.51	+21.19	-15.76	+21.09	59.22	15.39	82.25	18 58.8
2386563.5	5.93	13.12	252.21	+21.14	-15.01	+21.19	59.66	15.22	73.46	19 34.9
2386564.5	5.90	13.19	251.89	+21.08	-14.23	+21.28	60.10	15.04	64.67	20 10.9
2386565.5	5.87	13.26	251.57	+21.02	-13.45	+21.38	60.54	14.86	55.89	20 46.8
2386566.5	5.84	13.32	251.24	+20.97	-12.66	+21.48	60.98	14.67	47.12	21 22.7
2386567.5	5.82	13.38	250.89	+20.91	-11.86	+21.57	61.41	14.48	38.37	21 58.6
2386568.5	5.79	13.44	250.54	+20.85	-11.04	+21.67	61.85	14.27	29.62	22 34.4
2386569.5	5.77	13.49	250.18	+20.79	-10.22	+21.76	62.29	14.07	20.88	23 10.2
2386570.5	5.75	13.54	249.80	+20.73	- 9.39	+21.85	62.73	13.86	12.15	23 46.0
2386571.5	5.73	13.59	249.43	+20.67	- 8.55	+21.94	63.16	13.64	3.42	.. ..
2386572.5	5.71	13.63	249.04	+20.61	- 7.70	+22.03	63.60	13.42	354.70	0 21.7
2386573.5	5.70	13.67	248.65	+20.55	- 6.85	+22.12	64.04	13.19	345.99	0 57.4
2386574.5	5.68	13.70	248.25	+20.49	- 5.99	+22.20	64.47	12.96	337.29	1 33.1
2386575.5	5.67	13.73	247.84	+20.43	- 5.12	+22.29	64.91	12.72	328.58	2 08.8
2386576.5	5.66	13.76	247.44	+20.36	- 4.25	+22.37	65.35	12.48	319.89	2 44.4
2386577.5	5.65	13.78	247.02	+20.30	- 3.37	+22.45	65.78	12.24	311.19	3 20.1
2386578.5	5.64	13.79	246.61	+20.24	- 2.49	+22.53	66.22	12.00	302.50	3 55.7
2386579.5	5.64	13.81	246.19	+20.18	- 1.61	+22.61	66.66	11.75	293.81	4 31.3
2386580.5	5.64	13.81	245.77	+20.12	- 0.73	+22.69	67.10	11.51	285.12	5 06.9
2386581.5	5.63	13.81	245.36	+20.06	+ 0.16	+22.76	67.53	11.26	276.43	5 42.5
2386582.5	5.64	13.81	244.94	+20.00	+ 1.04	+22.84	67.97	11.01	267.74	6 18.2
2386583.5	5.64	13.81	244.52	+19.94	+ 1.93	+22.91	68.41	10.76	259.05	6 53.8
2386584.5	5.64	13.79	244.11	+19.88	+ 2.81	+22.99	68.84	10.51	250.36	7 29.4
2386585.5	5.65	13.78	243.69	+19.83	+ 3.69	+23.06	69.28	10.26	241.66	8 05.1
2386586.5	5.66	13.76	243.29	+19.77	+ 4.57	+23.13	69.71	10.02	232.96	8 40.8
2386587.5	5.67	13.73	242.88	+19.72	+ 5.44	+23.19	70.15	9.77	224.25	9 16.5
2386588.5	5.68	13.70	242.48	+19.66	+ 6.31	+23.26	70.59	9.53	215.54	9 52.2
2386589.5	5.70	13.67	242.09	+19.61	+ 7.17	+23.33	71.02	9.29	206.82	10 27.9
2386590.5	5.71	13.63	241.70	+19.56	+ 8.03	+23.39	71.46	9.06	198.10	11 03.7
2386591.5	5.73	13.59	241.32	+19.51	+ 8.88	+23.45	71.90	8.83	189.36	11 39.5
2386592.5	5.75	13.54	240.95	+19.47	+ 9.72	+23.51	72.33	8.60	180.62	12 15.4
2386593.5	5.77	13.49	240.59	+19.42	+10.56	+23.57	72.77	8.38	171.87	12 51.3
2386594.5	5.79	13.44	240.23	+19.38	+11.39	+23.63	73.21	8.16	163.11	13 27.2
2386595.5	5.82	13.38	239.89	+19.34	+12.20	+23.69	73.64	7.95	154.35	14 03.2
2386596.5	5.84	13.32	239.55	+19.31	+13.01	+23.75	74.08	7.74	145.57	14 39.2
2386597.5	5.87	13.26	239.23	+19.27	+13.81	+23.80	74.52	7.54	136.78	15 15.3
2386598.5	5.90	13.20	238.91	+19.24	+14.60	+23.85	74.96	7.34	127.98	15 51.4
2386599.5	5.93	13.13	238.61	+19.21	+15.38	+23.90	75.39	7.15	119.16	16 27.5
2386600.5	5.96	13.06	238.32	+19.18	+16.15	+23.95	75.83	6.97	110.34	17 03.8
2386601.5	6.00	12.98	238.04	+19.16	+16.90	+24.00	76.27	6.80	101.51	17 40.0
2386602.5	6.03	12.91	237.77	+19.14	+17.65	+24.05	76.70	6.63	92.66	18 16.4
2386603.5	6.07	12.83	237.51	+19.12	+18.38	+24.09	77.14	6.47	83.80	18 52.7
2386604.5	6.11	12.75	237.27	+19.11	+19.10	+24.14	77.58	6.31	74.92	19 29.2
2386605.5	6.15	12.67	237.03	+19.10	+19.81	+24.18	78.02	6.17	66.04	20 05.7
2386606.5	6.19	12.58	236.82	+19.09	+20.51	+24.22	78.45	6.03	57.14	20 42.2
2386607.5	6.23	12.50	236.61	+19.08	+21.19	+24.26	78.89	5.90	48.23	21 18.8
2386608.5	6.27	12.41	236.42	+19.08	+21.86	+24.30	79.33	5.78	39.30	21 55.5
2386609.5	6.32	12.32	236.24	+19.08	+22.52	+24.33	79.77	5.67	30.36	22 32.2
2386610.5	6.36	12.23	236.07	+19.08	+23.16	+24.37	80.20	5.56	21.41	23 09.0

PHYSICAL EPHEMERIS OF MARS, 1824

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Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2387315.5	6.36	12.25	291.37	+20.91	-23.44	+24.74	88.12	33.15	24.94	22	54.5
2387316.5	6.30	12.35	291.25	+20.92	-22.83	+24.75	88.56	33.11	15.97	23	31.2
2387317.5	6.25	12.46	291.11	+20.93	-22.21	+24.75	89.00	33.06	7.02	..	..
2387318.5	6.20	12.56	290.96	+20.94	-21.57	+24.75	89.44	33.01	358.07	0	07.9
2387319.5	6.15	12.67	290.79	+20.96	-20.92	+24.75	89.88	32.96	349.14	0	44.5
2387320.5	6.10	12.77	290.61	+20.98	-20.25	+24.75	90.33	32.90	340.22	1	21.1
2387321.5	6.05	12.87	290.42	+21.01	-19.57	+24.75	90.77	32.83	331.32	1	57.6
2387322.5	6.00	12.97	290.21	+21.03	-18.88	+24.75	91.21	32.76	322.43	2	34.1
2387323.5	5.95	13.07	290.00	+21.06	-18.17	+24.74	91.65	32.69	313.55	3	10.5
2387324.5	5.91	13.17	289.76	+21.09	-17.46	+24.74	92.10	32.61	304.69	3	46.8
2387325.5	5.87	13.27	289.52	+21.13	-16.72	+24.73	92.54	32.53	295.83	4	23.1
2387326.5	5.83	13.36	289.26	+21.17	-15.98	+24.72	92.98	32.44	286.99	4	59.4
2387327.5	5.79	13.45	288.99	+21.21	-15.22	+24.71	93.43	32.35	278.16	5	35.6
2387328.5	5.75	13.54	288.71	+21.25	-14.45	+24.69	93.87	32.25	269.35	6	11.7
2387329.5	5.71	13.63	288.42	+21.29	-13.67	+24.68	94.32	32.15	260.54	6	47.8
2387330.5	5.68	13.71	288.11	+21.34	-12.87	+24.66	94.76	32.04	251.74	7	23.9
2387331.5	5.64	13.80	287.80	+21.39	-12.07	+24.65	95.21	31.93	242.96	7	59.9
2387332.5	5.61	13.87	287.47	+21.44	-11.25	+24.63	95.65	31.81	234.19	8	35.8
2387333.5	5.58	13.95	287.14	+21.49	-10.43	+24.60	96.10	31.69	225.42	9	11.7
2387334.5	5.55	14.02	286.79	+21.55	- 9.59	+24.58	96.54	31.57	216.67	9	47.6
2387335.5	5.52	14.09	286.44	+21.60	- 8.75	+24.56	96.99	31.44	207.92	10	23.5
2387336.5	5.50	14.15	286.07	+21.66	- 7.89	+24.53	97.44	31.30	199.18	10	59.3
2387337.5	5.48	14.22	285.70	+21.72	- 7.03	+24.50	97.88	31.16	190.45	11	35.1
2387338.5	5.45	14.27	285.32	+21.78	- 6.16	+24.48	98.33	31.02	181.72	12	10.8
2387339.5	5.43	14.33	284.94	+21.84	- 5.29	+24.45	98.78	30.88	173.01	12	46.5
2387340.5	5.42	14.37	284.55	+21.91	- 4.41	+24.41	99.23	30.73	164.29	13	22.2
2387341.5	5.40	14.42	284.15	+21.97	- 3.52	+24.38	99.67	30.58	155.59	13	57.9
2387342.5	5.38	14.46	283.75	+22.04	- 2.63	+24.34	100.12	30.42	146.89	14	33.6
2387343.5	5.37	14.49	283.34	+22.10	- 1.73	+24.31	100.57	30.26	138.19	15	09.2
2387344.5	5.36	14.52	282.93	+22.17	- 0.83	+24.27	101.02	30.10	129.49	15	44.9
2387345.5	5.35	14.55	282.52	+22.23	+ 0.08	+24.23	101.47	29.94	120.80	16	20.5
2387346.5	5.34	14.57	282.11	+22.30	+ 0.98	+24.19	101.92	29.78	112.10	16	56.1
2387347.5	5.34	14.59	281.69	+22.37	+ 1.89	+24.14	102.37	29.61	103.41	17	31.7
2387348.5	5.33	14.60	281.28	+22.44	+ 2.79	+24.10	102.82	29.44	94.72	18	07.4
2387349.5	5.33	14.60	280.86	+22.50	+ 3.70	+24.05	103.27	29.27	86.03	18	43.0
2387350.5	5.33	14.60	280.45	+22.57	+ 4.60	+24.00	103.73	29.10	77.33	19	18.7
2387351.5	5.33	14.60	280.04	+22.64	+ 5.51	+23.95	104.18	28.93	68.64	19	54.3
2387352.5	5.33	14.59	279.63	+22.71	+ 6.41	+23.90	104.63	28.76	59.93	20	30.0
2387353.5	5.34	14.58	279.23	+22.77	+ 7.30	+23.85	105.08	28.59	51.23	21	05.7
2387354.5	5.35	14.56	278.83	+22.84	+ 8.19	+23.79	105.54	28.43	42.52	21	41.4
2387355.5	5.35	14.54	278.44	+22.90	+ 9.08	+23.74	105.99	28.26	33.80	22	17.2
2387356.5	5.36	14.51	278.05	+22.97	+ 9.96	+23.68	106.44	28.09	25.08	22	53.0
2387357.5	5.38	14.48	277.67	+23.03	+10.83	+23.62	106.90	27.93	16.35	23	28.8
2387358.5	5.39	14.44	277.30	+23.10	+11.69	+23.56	107.35	27.77	7.61	..	..
2387359.5	5.40	14.40	276.93	+23.16	+12.55	+23.49	107.81	27.61	358.86	0	04.7
2387360.5	5.42	14.36	276.58	+23.22	+13.39	+23.43	108.26	27.45	350.10	0	40.6
2387361.5	5.44	14.31	276.23	+23.29	+14.23	+23.36	108.72	27.30	341.33	1	16.5
2387362.5	5.46	14.26	275.90	+23.35	+15.06	+23.30	109.18	27.15	332.56	1	52.5
2387363.5	5.48	14.21	275.57	+23.41	+15.88	+23.23	109.64	27.01	323.77	2	28.6
2387364.5	5.50	14.15	275.26	+23.47	+16.68	+23.16	110.09	26.87	314.97	3	04.6
2387365.5	5.53	14.09	274.96	+23.53	+17.48	+23.08	110.55	26.73	306.16	3	40.8
2387366.5	5.55	14.02	274.67	+23.58	+18.26	+23.01	111.01	26.60	297.33	4	17.0
2387367.5	5.58	13.95	274.39	+23.64	+19.03	+22.93	111.47	26.47	288.50	4	53.2
2387368.5	5.61	13.88	274.12	+23.70	+19.79	+22.86	111.93	26.35	279.65	5	29.5
2387369.5	5.64	13.81	273.87	+23.75	+20.53	+22.78	112.39	26.23	270.79	6	05.9
2387370.5	5.67	13.74	273.63	+23.81	+21.26	+22.70	112.85	26.12	261.91	6	42.3
2387371.5	5.70	13.66	273.40	+23.86	+21.98	+22.62	113.31	26.02	253.02	7	18.8
2387372.5	5.73	13.58	273.19	+23.91	+22.69	+22.53	113.77	25.92	244.12	7	55.3
2387373.5	5.77	13.50	272.99	+23.97	+23.38	+22.45	114.23	25.82	235.20	8	31.9
2387374.5	5.80	13.42	272.80	+24.02	+24.06	+22.36	114.70	25.74	226.27	9	08.5
2387375.5	5.84	13.33	272.63	+24.07	+24.72	+22.27	115.16	25.65	217.33	9	45.3

Julian Day	Light- time	Diameter	A_E+180°	D_E	A_S-A_E	D_S	L_S	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2388085.5	5.66	13.75	330.54	+11.12	-21.88	+19.80	125.99	38.17	172.76	12 48.3
2388086.5	5.61	13.88	330.48	+11.17	-21.34	+19.68	126.47	38.19	163.72	13 25.3
2388087.5	5.55	14.02	330.42	+11.22	-20.78	+19.55	126.95	38.20	154.69	14 02.3
2388088.5	5.50	14.15	330.34	+11.28	-20.22	+19.42	127.42	38.21	145.67	14 39.3
2388089.5	5.45	14.29	330.25	+11.34	-19.64	+19.29	127.90	38.23	136.66	15 16.2
2388090.5	5.40	14.42	330.15	+11.41	-19.05	+19.16	128.38	38.24	127.67	15 53.1
2388091.5	5.35	14.55	330.03	+11.48	-18.45	+19.03	128.86	38.26	118.69	16 29.9
2388092.5	5.30	14.68	329.91	+11.57	-17.83	+18.89	129.35	38.28	109.71	17 06.7
2388093.5	5.25	14.82	329.77	+11.65	-17.21	+18.76	129.83	38.30	100.75	17 43.4
2388094.5	5.21	14.95	329.63	+11.74	-16.57	+18.62	130.31	38.32	91.81	18 20.1
2388095.5	5.16	15.08	329.47	+11.84	-15.93	+18.48	130.79	38.34	82.87	18 56.7
2388096.5	5.12	15.20	329.30	+11.95	-15.27	+18.34	131.28	38.37	73.94	19 33.3
2388097.5	5.08	15.33	329.11	+12.05	-14.60	+18.20	131.76	38.39	65.02	20 09.8
2388098.5	5.04	15.45	328.92	+12.17	-13.92	+18.06	132.25	38.42	56.12	20 46.3
2388099.5	5.00	15.57	328.72	+12.29	-13.22	+17.91	132.74	38.44	47.22	21 22.8
2388100.5	4.96	15.69	328.51	+12.41	-12.52	+17.77	133.22	38.47	38.34	21 59.2
2388101.5	4.93	15.81	328.28	+12.54	-11.81	+17.62	133.71	38.50	29.46	22 35.5
2388102.5	4.89	15.92	328.05	+12.67	-11.09	+17.47	134.20	38.52	20.60	23 11.9
2388103.5	4.86	16.03	327.80	+12.81	-10.36	+17.32	134.69	38.55	11.74	23 48.1
2388104.5	4.82	16.14	327.55	+12.95	-9.62	+17.17	135.18	38.58	2.89	.. ..
2388105.5	4.79	16.24	327.29	+13.10	-8.87	+17.01	135.67	38.60	354.06	0 24.4
2388106.5	4.76	16.34	327.02	+13.25	-8.11	+16.86	136.16	38.63	345.23	1 00.6
2388107.5	4.74	16.43	326.74	+13.40	-7.34	+16.70	136.65	38.65	336.40	1 36.8
2388108.5	4.71	16.52	326.45	+13.56	-6.57	+16.55	137.14	38.68	327.59	2 12.9
2388109.5	4.69	16.61	326.16	+13.72	-5.79	+16.39	137.64	38.71	318.78	2 49.0
2388110.5	4.66	16.69	325.86	+13.89	-5.00	+16.23	138.13	38.73	309.98	3 25.1
2388111.5	4.64	16.77	325.55	+14.05	-4.20	+16.07	138.63	38.75	301.19	4 01.1
2388112.5	4.62	16.84	325.23	+14.22	-3.40	+15.90	139.12	38.77	292.40	4 37.2
2388113.5	4.60	16.91	324.91	+14.39	-2.59	+15.74	139.62	38.80	283.61	5 13.2
2388114.5	4.59	16.97	324.59	+14.57	-1.78	+15.57	140.12	38.82	274.83	5 49.2
2388115.5	4.57	17.03	324.26	+14.74	-0.97	+15.41	140.62	38.83	266.05	6 25.2
2388116.5	4.56	17.08	323.93	+14.92	-0.15	+15.24	141.12	38.85	257.28	7 01.1
2388117.5	4.55	17.12	323.60	+15.09	+0.67	+15.07	141.62	38.87	248.51	7 37.1
2388118.5	4.54	17.16	323.26	+15.27	+1.49	+14.90	142.12	38.88	239.74	8 13.1
2388119.5	4.53	17.19	322.93	+15.44	+2.32	+14.73	142.62	38.89	230.97	8 49.0
2388120.5	4.52	17.22	322.59	+15.62	+3.14	+14.55	143.12	38.90	222.20	9 25.0
2388121.5	4.51	17.24	322.26	+15.80	+3.96	+14.38	143.62	38.91	213.43	10 00.9
2388122.5	4.51	17.26	321.92	+15.97	+4.79	+14.20	144.13	38.92	204.66	10 36.9
2388123.5	4.51	17.27	321.59	+16.14	+5.61	+14.03	144.63	38.93	195.88	11 12.9
2388124.5	4.51	17.27	321.26	+16.32	+6.42	+13.85	145.14	38.93	187.10	11 48.9
2388125.5	4.51	17.27	320.93	+16.48	+7.24	+13.67	145.64	38.93	178.32	12 24.9
2388126.5	4.51	17.26	320.61	+16.65	+8.05	+13.49	146.15	38.94	169.54	13 00.9
2388127.5	4.51	17.25	320.29	+16.82	+8.85	+13.31	146.66	38.94	160.75	13 37.0
2388128.5	4.52	17.23	319.98	+16.98	+9.65	+13.12	147.17	38.93	151.95	14 13.1
2388129.5	4.53	17.20	319.67	+17.14	+10.45	+12.94	147.68	38.93	143.15	14 49.2
2388130.5	4.53	17.17	319.37	+17.29	+11.24	+12.75	148.19	38.93	134.34	15 25.3
2388131.5	4.54	17.14	319.08	+17.44	+12.02	+12.57	148.70	38.92	125.52	16 01.5
2388132.5	4.55	17.10	318.79	+17.59	+12.79	+12.38	149.21	38.92	116.69	16 37.7
2388133.5	4.57	17.05	318.52	+17.74	+13.55	+12.19	149.72	38.91	107.86	17 14.0
2388134.5	4.58	17.00	318.25	+17.88	+14.31	+12.00	150.24	38.91	99.01	17 50.3
2388135.5	4.59	16.95	317.99	+18.01	+15.06	+11.81	150.75	38.90	90.16	18 26.6
2388136.5	4.61	16.89	317.74	+18.15	+15.79	+11.61	151.27	38.89	81.30	19 03.0
2388137.5	4.63	16.83	317.50	+18.27	+16.52	+11.42	151.78	38.88	72.42	19 39.4
2388138.5	4.64	16.76	317.28	+18.40	+17.24	+11.22	152.30	38.88	63.54	20 15.9
2388139.5	4.66	16.69	317.06	+18.52	+17.94	+11.03	152.82	38.87	54.64	20 52.4
2388140.5	4.69	16.61	316.85	+18.63	+18.64	+10.83	153.34	38.86	45.74	21 29.0
2388141.5	4.71	16.54	316.66	+18.74	+19.32	+10.63	153.86	38.85	36.82	22 05.6
2388142.5	4.73	16.46	316.48	+18.84	+19.99	+10.43	154.38	38.84	27.88	22 42.3
2388143.5	4.75	16.37	316.31	+18.94	+20.65	+10.23	154.90	38.84	18.94	23 19.1
2388144.5	4.78	16.29	316.15	+19.03	+21.29	+10.03	155.42	38.83	9.98	23 55.9
2388145.5	4.81	16.20	316.01	+19.12	+21.93	+9.83	155.95	38.82	1.01	.. ..

Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2388875.5	4.22	18.44	20.51	- 7.60	-21.09	+ 0.26	179.37	17.69	127.78	15 52.9
2388876.5	4.18	18.63	20.51	- 7.52	-20.57	+ 0.03	179.93	17.70	118.69	16 30.2
2388877.5	4.14	18.81	20.49	- 7.43	-20.04	- 0.21	180.50	17.72	109.61	17 07.5
2388878.5	4.10	18.99	20.47	- 7.34	-19.50	- 0.45	181.07	17.75	100.53	17 44.7
2388879.5	4.06	19.17	20.43	- 7.25	-18.94	- 0.68	181.63	17.79	91.47	18 21.8
2388880.5	4.02	19.35	20.38	- 7.15	-18.38	- 0.92	182.20	17.84	82.43	18 58.9
2388881.5	3.99	19.53	20.31	- 7.04	-17.80	- 1.16	182.77	17.89	73.39	19 35.9
2388882.5	3.95	19.71	20.24	- 6.93	-17.21	- 1.40	183.34	17.95	64.36	20 12.9
2388883.5	3.92	19.88	20.16	- 6.81	-16.60	- 1.64	183.91	18.01	55.35	20 49.9
2388884.5	3.88	20.05	20.06	- 6.68	-15.99	- 1.88	184.49	18.09	46.34	21 26.8
2388885.5	3.85	20.22	19.95	- 6.56	-15.36	- 2.12	185.06	18.17	37.35	22 03.6
2388886.5	3.82	20.39	19.84	- 6.43	-14.72	- 2.36	185.63	18.26	28.37	22 40.4
2388887.5	3.79	20.55	19.71	- 6.29	-14.07	- 2.60	186.21	18.36	19.39	23 17.2
2388888.5	3.76	20.71	19.57	- 6.15	-13.40	- 2.84	186.78	18.46	10.43	23 53.9
2388889.5	3.73	20.86	19.42	- 6.00	-12.73	- 3.08	187.36	18.57	1.48	.. ..
2388890.5	3.70	21.01	19.26	- 5.85	-12.05	- 3.32	187.94	18.68	352.54	0 30.6
2388891.5	3.68	21.16	19.10	- 5.70	-11.35	- 3.56	188.52	18.81	343.60	1 07.3
2388892.5	3.66	21.30	18.92	- 5.55	-10.65	- 3.80	189.10	18.93	334.68	1 43.9
2388893.5	3.63	21.43	18.74	- 5.39	- 9.93	- 4.04	189.68	19.07	325.76	2 20.4
2388894.5	3.61	21.56	18.54	- 5.23	- 9.21	- 4.28	190.26	19.21	316.85	2 57.0
2388895.5	3.59	21.69	18.34	- 5.06	- 8.48	- 4.52	190.84	19.35	307.94	3 33.5
2388896.5	3.57	21.80	18.14	- 4.90	- 7.74	- 4.76	191.43	19.50	299.05	4 10.0
2388897.5	3.55	21.92	17.92	- 4.73	- 6.99	- 5.00	192.01	19.65	290.16	4 46.4
2388898.5	3.54	22.02	17.70	- 4.56	- 6.23	- 5.24	192.60	19.80	281.28	5 22.9
2388899.5	3.52	22.12	17.47	- 4.39	- 5.47	- 5.48	193.18	19.96	272.40	5 59.3
2388900.5	3.51	22.21	17.24	- 4.22	- 4.70	- 5.72	193.77	20.12	263.52	6 35.7
2388901.5	3.49	22.29	17.01	- 4.05	- 3.92	- 5.96	194.36	20.29	254.65	7 12.0
2388902.5	3.48	22.37	16.77	- 3.88	- 3.14	- 6.20	194.95	20.45	245.79	7 48.4
2388903.5	3.47	22.44	16.53	- 3.71	- 2.36	- 6.44	195.53	20.62	236.93	8 24.7
2388904.5	3.46	22.50	16.28	- 3.54	- 1.57	- 6.68	196.13	20.79	228.07	9 01.0
2388905.5	3.45	22.55	16.03	- 3.37	- 0.78	- 6.92	196.72	20.96	219.21	9 37.4
2388906.5	3.44	22.60	15.78	- 3.20	+ 0.02	- 7.16	197.31	21.14	210.35	10 13.7
2388907.5	3.44	22.63	15.53	- 3.03	+ 0.82	- 7.40	197.90	21.31	201.50	10 50.0
2388908.5	3.43	22.66	15.28	- 2.87	+ 1.62	- 7.63	198.50	21.48	192.64	11 26.3
2388909.5	3.43	22.68	15.03	- 2.70	+ 2.42	- 7.87	199.09	21.65	183.78	12 02.6
2388910.5	3.43	22.70	14.78	- 2.54	+ 3.22	- 8.11	199.69	21.82	174.93	12 39.0
2388911.5	3.43	22.70	14.53	- 2.39	+ 4.02	- 8.35	200.28	21.98	166.07	13 15.3
2388912.5	3.43	22.70	14.29	- 2.24	+ 4.82	- 8.58	200.88	22.15	157.20	13 51.7
2388913.5	3.43	22.68	14.04	- 2.09	+ 5.62	- 8.82	201.48	22.31	148.34	14 28.0
2388914.5	3.43	22.66	13.80	- 1.94	+ 6.42	- 9.05	202.08	22.47	139.47	15 04.4
2388915.5	3.44	22.63	13.57	- 1.80	+ 7.21	- 9.29	202.68	22.62	130.59	15 40.8
2388916.5	3.44	22.60	13.34	- 1.67	+ 8.00	- 9.52	203.28	22.78	121.71	16 17.3
2388917.5	3.45	22.55	13.12	- 1.54	+ 8.78	- 9.76	203.88	22.92	112.83	16 53.7
2388918.5	3.46	22.50	12.90	- 1.42	+ 9.57	- 9.99	204.48	23.06	103.93	17 30.2
2388919.5	3.47	22.45	12.69	- 1.30	+10.34	-10.23	205.08	23.20	95.04	18 06.7
2388920.5	3.48	22.38	12.49	- 1.19	+11.11	-10.46	205.69	23.33	86.13	18 43.3
2388921.5	3.49	22.31	12.29	- 1.08	+11.87	-10.69	206.29	23.46	77.21	19 19.9
2388922.5	3.50	22.23	12.10	- 0.98	+12.63	-10.92	206.90	23.58	68.29	19 56.5
2388923.5	3.52	22.15	11.93	- 0.89	+13.38	-11.15	207.50	23.69	59.35	20 33.2
2388924.5	3.53	22.06	11.76	- 0.80	+14.12	-11.38	208.11	23.80	50.41	21 09.9
2388925.5	3.54	21.96	11.60	- 0.73	+14.85	-11.61	208.72	23.90	41.46	21 46.7
2388926.5	3.56	21.86	11.45	- 0.65	+15.58	-11.83	209.33	23.99	32.50	22 23.5
2388927.5	3.58	21.75	11.31	- 0.59	+16.30	-12.06	209.94	24.08	23.52	23 00.4
2388928.5	3.60	21.64	11.18	- 0.53	+17.00	-12.29	210.55	24.15	14.54	23 37.3
2388929.5	3.62	21.53	11.07	- 0.48	+17.70	-12.51	211.16	24.23	5.54	.. ..
2388930.5	3.64	21.41	10.96	- 0.44	+18.39	-12.74	211.77	24.29	356.54	0 14.2
2388931.5	3.66	21.29	10.86	- 0.41	+19.07	-12.96	212.38	24.35	347.52	0 51.2
2388932.5	3.68	21.16	10.78	- 0.38	+19.74	-13.18	212.99	24.40	338.49	1 28.3
2388933.5	3.70	21.03	10.71	- 0.36	+20.40	-13.40	213.61	24.44	329.45	2 05.4
2388934.5	3.73	20.90	10.65	- 0.34	+21.05	-13.62	214.22	24.47	320.40	2 42.5
2388935.5	3.75	20.76	10.60	- 0.34	+21.70	-13.84	214.83	24.50	311.33	3 19.7

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_r °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2389685.5	3.55	21.95	99.56	-20.10	-26.59	-23.79	254.46	331.20	231.39	8	47.7
2389686.5	3.52	22.10	99.52	-20.09	-25.86	-23.87	255.09	331.22	222.33	9	24.9
2389687.5	3.50	22.26	99.46	-20.08	-25.11	-23.94	255.73	331.24	213.29	10	02.0
2389688.5	3.47	22.40	99.38	-20.07	-24.35	-24.01	256.36	331.27	204.26	10	39.0
2389689.5	3.45	22.55	99.30	-20.07	-23.57	-24.08	256.99	331.31	195.24	11	15.9
2389690.5	3.43	22.69	99.19	-20.06	-22.77	-24.14	257.63	331.35	186.24	11	52.8
2389691.5	3.41	22.83	99.08	-20.06	-21.97	-24.20	258.26	331.39	177.25	12	29.7
2389692.5	3.39	22.96	98.95	-20.07	-21.15	-24.26	258.89	331.45	168.28	13	06.5
2389693.5	3.37	23.09	98.81	-20.08	-20.31	-24.32	259.53	331.51	159.32	13	43.2
2389694.5	3.35	23.21	98.65	-20.09	-19.46	-24.37	260.16	331.57	150.37	14	19.9
2389695.5	3.34	23.32	98.48	-20.10	-18.60	-24.41	260.79	331.64	141.43	14	56.5
2389696.5	3.32	23.43	98.30	-20.12	-17.73	-24.46	261.43	331.72	132.51	15	33.1
2389697.5	3.31	23.54	98.11	-20.14	-16.84	-24.50	262.06	331.80	123.60	16	09.6
2389698.5	3.29	23.63	97.91	-20.16	-15.95	-24.54	262.69	331.88	114.70	16	46.1
2389699.5	3.28	23.73	97.69	-20.19	-15.04	-24.58	263.32	331.97	105.81	17	22.5
2389700.5	3.27	23.81	97.47	-20.21	-14.12	-24.61	263.95	332.07	96.93	17	58.9
2389701.5	3.26	23.89	97.23	-20.25	-13.19	-24.64	264.58	332.17	88.06	18	35.2
2389702.5	3.25	23.96	96.99	-20.28	-12.25	-24.66	265.22	332.28	79.20	19	11.5
2389703.5	3.24	24.02	96.73	-20.32	-11.30	-24.69	265.85	332.39	70.35	19	47.8
2389704.5	3.23	24.07	96.47	-20.36	-10.35	-24.70	266.48	332.50	61.50	20	24.0
2389705.5	3.23	24.11	96.20	-20.40	-9.38	-24.72	267.11	332.62	52.67	21	00.2
2389706.5	3.22	24.15	95.92	-20.45	-8.41	-24.73	267.74	332.74	43.84	21	36.4
2389707.5	3.22	24.18	95.63	-20.50	-7.43	-24.74	268.37	332.87	35.02	22	12.6
2389708.5	3.22	24.20	95.34	-20.55	-6.45	-24.75	268.99	332.99	26.20	22	48.7
2389709.5	3.22	24.21	95.05	-20.60	-5.47	-24.75	269.62	333.13	17.39	23	24.8
2389710.5	3.22	24.21	94.75	-20.66	-4.48	-24.75	270.25	333.26	8.58	..	..
2389711.5	3.22	24.20	94.45	-20.72	-3.48	-24.75	270.88	333.40	359.77	0	00.9
2389712.5	3.22	24.18	94.15	-20.78	-2.49	-24.75	271.51	333.53	350.97	0	37.0
2389713.5	3.22	24.15	93.84	-20.84	-1.49	-24.74	272.13	333.67	342.16	1	13.1
2389714.5	3.23	24.11	93.53	-20.90	-0.50	-24.72	272.76	333.81	333.36	1	49.2
2389715.5	3.23	24.07	93.23	-20.97	+ 0.50	-24.71	273.38	333.95	324.55	2	25.3
2389716.5	3.24	24.01	92.93	-21.03	+ 1.49	-24.69	274.01	334.09	315.75	3	01.5
2389717.5	3.25	23.95	92.63	-21.10	+ 2.48	-24.67	274.63	334.23	306.94	3	37.6
2389718.5	3.26	23.87	92.33	-21.17	+ 3.46	-24.64	275.26	334.37	298.12	4	13.7
2389719.5	3.27	23.79	92.03	-21.24	+ 4.44	-24.62	275.88	334.51	289.31	4	49.9
2389720.5	3.28	23.70	91.74	-21.32	+ 5.41	-24.58	276.51	334.65	280.49	5	26.1
2389721.5	3.30	23.60	91.46	-21.39	+ 6.38	-24.55	277.13	334.78	271.66	6	02.3
2389722.5	3.31	23.49	91.18	-21.47	+ 7.34	-24.51	277.75	334.91	262.82	6	38.5
2389723.5	3.33	23.38	90.91	-21.54	+ 8.29	-24.47	278.37	335.04	253.98	7	14.8
2389724.5	3.35	23.26	90.65	-21.62	+ 9.23	-24.43	278.99	335.17	245.13	7	51.1
2389725.5	3.37	23.13	90.40	-21.69	+10.17	-24.38	279.62	335.29	236.27	8	27.4
2389726.5	3.39	22.99	90.16	-21.77	+11.09	-24.33	280.24	335.41	227.40	9	03.8
2389727.5	3.41	22.85	89.92	-21.85	+12.00	-24.28	280.86	335.53	218.52	9	40.2
2389728.5	3.43	22.70	89.70	-21.93	+12.90	-24.23	281.47	335.64	209.63	10	16.7
2389729.5	3.45	22.55	89.48	-22.01	+13.79	-24.17	282.09	335.74	200.74	10	53.2
2389730.5	3.48	22.39	89.28	-22.09	+14.67	-24.11	282.71	335.84	191.82	11	29.8
2389731.5	3.50	22.23	89.09	-22.17	+15.53	-24.04	283.33	335.94	182.90	12	06.4
2389732.5	3.53	22.06	88.91	-22.25	+16.38	-23.98	283.94	336.03	173.97	12	43.1
2389733.5	3.56	21.89	88.74	-22.33	+17.22	-23.91	284.56	336.11	165.02	13	19.8
2389734.5	3.59	21.71	88.59	-22.41	+18.04	-23.84	285.17	336.19	156.06	13	56.6
2389735.5	3.62	21.53	88.44	-22.49	+18.85	-23.76	285.79	336.27	147.09	14	33.5
2389736.5	3.65	21.35	88.31	-22.57	+19.65	-23.68	286.40	336.33	138.10	15	10.4
2389737.5	3.68	21.16	88.20	-22.65	+20.42	-23.60	287.02	336.39	129.10	15	47.3
2389738.5	3.71	20.97	88.10	-22.73	+21.19	-23.52	287.63	336.44	120.08	16	24.4
2389739.5	3.75	20.78	88.01	-22.81	+21.94	-23.43	288.24	336.49	111.05	17	01.4
2389740.5	3.78	20.58	87.94	-22.89	+22.67	-23.35	288.85	336.53	102.01	17	38.6
2389741.5	3.82	20.39	87.88	-22.97	+23.38	-23.25	289.46	336.56	92.95	18	15.8
2389742.5	3.86	20.19	87.83	-23.05	+24.08	-23.16	290.07	336.59	83.88	18	53.1
2389743.5	3.89	19.99	87.80	-23.13	+24.77	-23.06	290.68	336.61	74.79	19	30.4
2389744.5	3.93	19.79	87.79	-23.21	+25.43	-22.96	291.29	336.62	65.69	20	07.8
2389745.5	3.97	19.59	87.79	-23.29	+26.08	-22.86	291.90	336.62	56.57	20	45.3

Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2390475.5	4.62	16.86	165.05	- 5.39	-25.06	-16.51	317.25	324.88	170.29	12	58.4
2390476.5	4.59	16.97	164.99	- 5.46	-24.44	-16.33	317.82	324.85	161.24	13	35.5
2390477.5	4.56	17.07	164.92	- 5.55	-23.81	-16.15	318.39	324.82	152.21	14	12.5
2390478.5	4.53	17.18	164.84	- 5.64	-23.17	-15.96	318.95	324.78	143.20	14	49.5
2390479.5	4.50	17.28	164.74	- 5.73	-22.52	-15.77	319.52	324.74	134.19	15	26.4
2390480.5	4.48	17.38	164.63	- 5.84	-21.85	-15.59	320.09	324.69	125.20	16	03.2
2390481.5	4.45	17.48	164.51	- 5.95	-21.18	-15.40	320.65	324.64	116.22	16	40.0
2390482.5	4.43	17.58	164.37	- 6.06	-20.49	-15.21	321.22	324.59	107.25	17	16.8
2390483.5	4.41	17.67	164.22	- 6.19	-19.79	-15.02	321.78	324.53	98.30	17	53.5
2390484.5	4.38	17.76	164.06	- 6.32	-19.09	-14.82	322.34	324.47	89.36	18	30.1
2390485.5	4.36	17.84	163.89	- 6.45	-18.37	-14.63	322.90	324.40	80.43	19	06.7
2390486.5	4.34	17.92	163.70	- 6.60	-17.64	-14.44	323.46	324.34	71.51	19	43.2
2390487.5	4.33	18.00	163.51	- 6.75	-16.90	-14.24	324.02	324.26	62.61	20	19.7
2390488.5	4.31	18.07	163.30	- 6.90	-16.15	-14.05	324.58	324.19	53.71	20	56.2
2390489.5	4.29	18.14	163.08	- 7.06	-15.40	-13.85	325.14	324.11	44.83	21	32.6
2390490.5	4.28	18.20	162.85	- 7.23	-14.63	-13.65	325.69	324.03	35.95	22	08.9
2390491.5	4.26	18.25	162.61	- 7.40	-13.86	-13.45	326.25	323.95	27.09	22	45.2
2390492.5	4.25	18.30	162.36	- 7.57	-13.08	-13.25	326.80	323.87	18.23	23	21.5
2390493.5	4.24	18.35	162.10	- 7.75	-12.29	-13.05	327.35	323.78	9.39	23	57.7
2390494.5	4.23	18.39	161.83	- 7.93	-11.49	-12.85	327.91	323.69	0.55	..	..
2390495.5	4.23	18.42	161.55	- 8.12	-10.69	-12.65	328.46	323.60	351.72	0	34.0
2390496.5	4.22	18.45	161.27	- 8.31	- 9.88	-12.45	329.01	323.51	342.90	1	10.1
2390497.5	4.21	18.47	160.98	- 8.50	- 9.07	-12.25	329.56	323.42	334.08	1	46.3
2390498.5	4.21	18.49	160.68	- 8.70	- 8.25	-12.05	330.11	323.33	325.27	2	22.4
2390499.5	4.21	18.50	160.38	- 8.90	- 7.42	-11.84	330.65	323.24	316.47	2	58.5
2390500.5	4.21	18.50	160.07	- 9.10	- 6.60	-11.64	331.20	323.15	307.67	3	34.6
2390501.5	4.21	18.49	159.75	- 9.30	- 5.77	-11.43	331.75	323.06	298.87	4	10.6
2390502.5	4.21	18.48	159.44	- 9.50	- 4.94	-11.23	332.29	322.97	290.08	4	46.7
2390503.5	4.22	18.46	159.12	- 9.71	- 4.10	-11.02	332.83	322.88	281.29	5	22.7
2390504.5	4.22	18.44	158.79	- 9.91	- 3.27	-10.82	333.38	322.79	272.51	5	58.7
2390505.5	4.23	18.41	158.47	-10.11	- 2.43	-10.61	333.92	322.70	263.72	6	34.7
2390506.5	4.24	18.37	158.14	-10.31	- 1.60	-10.40	334.46	322.62	254.94	7	10.8
2390507.5	4.25	18.32	157.82	-10.51	- 0.77	-10.19	335.00	322.53	246.15	7	46.8
2390508.5	4.26	18.27	157.49	-10.71	+ 0.06	- 9.98	335.54	322.45	237.36	8	22.8
2390509.5	4.28	18.21	157.17	-10.91	+ 0.89	- 9.78	336.08	322.37	228.58	8	58.9
2390510.5	4.29	18.14	156.85	-11.11	+ 1.71	- 9.57	336.61	322.29	219.78	9	34.9
2390511.5	4.31	18.07	156.53	-11.30	+ 2.53	- 9.36	337.15	322.22	210.99	10	11.0
2390512.5	4.33	17.99	156.22	-11.49	+ 3.34	- 9.15	337.69	322.15	202.19	10	47.1
2390513.5	4.35	17.91	155.91	-11.67	+ 4.15	- 8.94	338.22	322.07	193.39	11	23.2
2390514.5	4.37	17.82	155.61	-11.85	+ 4.95	- 8.73	338.75	322.01	184.58	11	59.3
2390515.5	4.39	17.72	155.31	-12.03	+ 5.74	- 8.52	339.29	321.94	175.76	12	35.5
2390516.5	4.42	17.62	155.02	-12.20	+ 6.52	- 8.31	339.82	321.88	166.94	13	11.7
2390517.5	4.44	17.52	154.73	-12.37	+ 7.30	- 8.10	340.35	321.82	158.11	13	47.9
2390518.5	4.47	17.40	154.46	-12.53	+ 8.07	- 7.88	340.88	321.77	149.27	14	24.2
2390519.5	4.50	17.29	154.19	-12.69	+ 8.82	- 7.67	341.41	321.71	140.42	15	00.5
2390520.5	4.53	17.17	153.93	-12.84	+ 9.57	- 7.46	341.94	321.66	131.56	15	36.8
2390521.5	4.57	17.05	153.68	-12.99	+10.30	- 7.25	342.46	321.61	122.70	16	13.2
2390522.5	4.60	16.92	153.44	-13.13	+11.03	- 7.04	342.99	321.57	113.82	16	49.7
2390523.5	4.64	16.79	153.22	-13.27	+11.74	- 6.82	343.51	321.53	104.93	17	26.1
2390524.5	4.67	16.66	153.00	-13.40	+12.44	- 6.61	344.04	321.49	96.03	18	02.7
2390525.5	4.71	16.52	152.79	-13.52	+13.13	- 6.40	344.56	321.45	87.12	18	39.3
2390526.5	4.75	16.38	152.59	-13.63	+13.81	- 6.19	345.08	321.41	78.20	19	15.9
2390527.5	4.79	16.24	152.41	-13.74	+14.47	- 5.97	345.61	321.38	69.27	19	52.6
2390528.5	4.84	16.10	152.24	-13.85	+15.12	- 5.76	346.13	321.35	60.32	20	29.3
2390529.5	4.88	15.96	152.08	-13.95	+15.76	- 5.55	346.65	321.32	51.36	21	06.1
2390530.5	4.92	15.81	151.93	-14.04	+16.39	- 5.34	347.17	321.30	42.39	21	42.9
2390531.5	4.97	15.66	151.79	-14.12	+17.00	- 5.12	347.68	321.27	33.41	22	19.8
2390532.5	5.02	15.51	151.66	-14.20	+17.60	- 4.91	348.20	321.25	24.42	22	56.8
2390533.5	5.07	15.36	151.55	-14.27	+18.18	- 4.70	348.72	321.23	15.41	23	33.8
2390534.5	5.12	15.21	151.45	-14.34	+18.75	- 4.49	349.23	321.21	6.39	..	..
2390535.5	5.17	15.06	151.36	-14.40	+19.31	- 4.27	349.75	321.20	357.36	0	10.8

Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2391250.5	5.69	13.67	206.10	+10.38	-22.62	+ 1.61	3.84	346.05	270.24	6 08.2
2391251.5	5.65	13.77	205.99	+10.29	-22.06	+ 1.81	4.33	345.97	261.25	6 45.1
2391252.5	5.62	13.86	205.87	+10.18	-21.49	+ 2.02	4.82	345.89	252.28	7 21.9
2391253.5	5.58	13.95	205.73	+10.07	-20.91	+ 2.22	5.31	345.79	243.32	7 58.6
2391254.5	5.55	14.03	205.58	+ 9.96	-20.32	+ 2.42	5.80	345.69	234.36	8 35.3
2391255.5	5.51	14.12	205.42	+ 9.84	-19.71	+ 2.63	6.29	345.57	225.43	9 12.0
2391256.5	5.48	14.20	205.25	+ 9.71	-19.09	+ 2.83	6.77	345.45	216.50	9 48.6
2391257.5	5.45	14.28	205.06	+ 9.58	-18.46	+ 3.03	7.26	345.32	207.59	10 25.1
2391258.5	5.42	14.36	204.86	+ 9.45	-17.82	+ 3.24	7.75	345.19	198.68	11 01.6
2391259.5	5.39	14.43	204.65	+ 9.31	-17.17	+ 3.44	8.23	345.04	189.79	11 38.0
2391260.5	5.37	14.51	204.43	+ 9.16	-16.50	+ 3.64	8.72	344.89	180.92	12 14.4
2391261.5	5.34	14.58	204.19	+ 9.02	-15.83	+ 3.84	9.20	344.73	172.05	12 50.8
2391262.5	5.32	14.64	203.95	+ 8.86	-15.14	+ 4.04	9.68	344.56	163.19	13 27.1
2391263.5	5.29	14.70	203.69	+ 8.70	-14.44	+ 4.24	10.17	344.38	154.34	14 03.3
2391264.5	5.27	14.76	203.43	+ 8.54	-13.74	+ 4.44	10.65	344.20	145.51	14 39.5
2391265.5	5.25	14.82	203.15	+ 8.38	-13.02	+ 4.64	11.13	344.01	136.68	15 15.7
2391266.5	5.24	14.87	202.86	+ 8.21	-12.30	+ 4.83	11.61	343.82	127.86	15 51.8
2391267.5	5.22	14.92	202.57	+ 8.04	-11.56	+ 5.03	12.09	343.62	119.05	16 27.9
2391268.5	5.20	14.96	202.27	+ 7.86	-10.82	+ 5.23	12.57	343.41	110.25	17 04.0
2391269.5	5.19	15.00	201.96	+ 7.69	-10.07	+ 5.43	13.05	343.20	101.46	17 40.0
2391270.5	5.18	15.03	201.64	+ 7.51	- 9.31	+ 5.62	13.53	342.99	92.67	18 16.0
2391271.5	5.17	15.06	201.31	+ 7.32	- 8.55	+ 5.82	14.00	342.77	83.89	18 52.0
2391272.5	5.16	15.08	200.98	+ 7.14	- 7.78	+ 6.01	14.48	342.55	75.12	19 28.0
2391273.5	5.16	15.10	200.64	+ 6.95	- 7.01	+ 6.20	14.96	342.32	66.35	20 03.9
2391274.5	5.15	15.11	200.30	+ 6.77	- 6.23	+ 6.40	15.43	342.09	57.59	20 39.8
2391275.5	5.15	15.12	199.95	+ 6.58	- 5.44	+ 6.59	15.91	341.86	48.82	21 15.7
2391276.5	5.15	15.12	199.60	+ 6.39	- 4.66	+ 6.78	16.38	341.63	40.07	21 51.6
2391277.5	5.15	15.12	199.25	+ 6.21	- 3.87	+ 6.97	16.85	341.39	31.31	22 27.5
2391278.5	5.15	15.11	198.90	+ 6.02	- 3.08	+ 7.16	17.33	341.16	22.56	23 03.4
2391279.5	5.16	15.10	198.54	+ 5.83	- 2.29	+ 7.35	17.80	340.92	13.80	23 39.3
2391280.5	5.16	15.08	198.18	+ 5.65	- 1.49	+ 7.54	18.27	340.69	5.05	•• •• •
2391281.5	5.17	15.06	197.83	+ 5.46	- 0.70	+ 7.73	18.74	340.45	356.30	0 15.2
2391282.5	5.18	15.03	197.47	+ 5.28	+ 0.09	+ 7.92	19.21	340.22	347.54	0 51.1
2391283.5	5.19	14.99	197.12	+ 5.10	+ 0.87	+ 8.11	19.68	339.99	338.78	1 27.0
2391284.5	5.21	14.95	196.77	+ 4.92	+ 1.66	+ 8.29	20.15	339.76	330.02	2 02.9
2391285.5	5.22	14.91	196.42	+ 4.75	+ 2.44	+ 8.48	20.62	339.54	321.25	2 38.9
2391286.5	5.24	14.86	196.08	+ 4.58	+ 3.22	+ 8.67	21.09	339.32	312.48	3 14.8
2391287.5	5.26	14.80	195.74	+ 4.41	+ 3.99	+ 8.85	21.56	339.10	303.71	3 50.8
2391288.5	5.28	14.74	195.41	+ 4.25	+ 4.76	+ 9.03	22.02	338.89	294.93	4 26.8
2391289.5	5.30	14.68	195.08	+ 4.09	+ 5.52	+ 9.22	22.49	338.68	286.14	5 02.8
2391290.5	5.33	14.61	194.76	+ 3.93	+ 6.28	+ 9.40	22.96	338.47	277.35	5 38.9
2391291.5	5.35	14.54	194.45	+ 3.78	+ 7.02	+ 9.58	23.42	338.28	268.55	6 15.0
2391292.5	5.38	14.47	194.14	+ 3.64	+ 7.76	+ 9.76	23.89	338.08	259.74	6 51.1
2391293.5	5.41	14.39	193.84	+ 3.50	+ 8.50	+ 9.94	24.35	337.89	250.92	7 27.3
2391294.5	5.44	14.30	193.55	+ 3.36	+ 9.22	+10.12	24.81	337.71	242.10	8 03.5
2391295.5	5.47	14.22	193.27	+ 3.23	+ 9.94	+10.30	25.28	337.54	233.26	8 39.7
2391296.5	5.51	14.13	193.00	+ 3.11	+10.64	+10.48	25.74	337.37	224.42	9 16.0
2391297.5	5.55	14.04	192.74	+ 2.99	+11.34	+10.65	26.20	337.21	215.56	9 52.3
2391298.5	5.58	13.94	192.49	+ 2.88	+12.03	+10.83	26.66	337.05	206.70	10 28.7
2391299.5	5.62	13.85	192.24	+ 2.77	+12.70	+11.01	27.12	336.90	197.82	11 05.1
2391300.5	5.66	13.75	192.01	+ 2.67	+13.37	+11.18	27.59	336.76	188.94	11 41.6
2391301.5	5.71	13.64	191.79	+ 2.58	+14.03	+11.35	28.05	336.63	180.04	12 18.1
2391302.5	5.75	13.54	191.58	+ 2.49	+14.67	+11.53	28.50	336.50	171.13	12 54.7
2391303.5	5.79	13.44	191.38	+ 2.41	+15.30	+11.70	28.96	336.38	162.21	13 31.3
2391304.5	5.84	13.33	191.19	+ 2.34	+15.93	+11.87	29.42	336.27	153.28	14 07.9
2391305.5	5.89	13.22	191.02	+ 2.27	+16.54	+12.04	29.88	336.17	144.34	14 44.6
2391306.5	5.94	13.11	190.85	+ 2.21	+17.14	+12.21	30.34	336.07	135.38	15 21.4
2391307.5	5.99	13.00	190.70	+ 2.15	+17.73	+12.38	30.80	335.98	126.42	15 58.2
2391308.5	6.04	12.89	190.56	+ 2.10	+18.30	+12.55	31.25	335.90	117.44	16 35.1
2391309.5	6.09	12.78	190.43	+ 2.06	+18.87	+12.71	31.71	335.82	108.45	17 12.0
2391310.5	6.15	12.66	190.31	+ 2.03	+19.42	+12.88	32.16	335.76	99.44	17 49.0

PHYSICAL EPHEMERIS OF MARS, 1837

37

Julian Day	Light- time	Diameter	A_E+180°	D_E	A_S-A_E	D_S	L_S	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2392015.5	6.40	12.16	241.52	+20.03	-23.90	+15.72	40.32	8.96	107.00	17 17.8
2392016.5	6.35	12.25	241.39	+19.97	-23.34	+15.87	40.77	8.88	98.03	17 54.6
2392017.5	6.31	12.34	241.25	+19.91	-22.76	+16.02	41.21	8.80	89.08	18 31.3
2392018.5	6.26	12.43	241.10	+19.84	-22.16	+16.16	41.66	8.71	80.13	19 07.9
2392019.5	6.22	12.52	240.93	+19.77	-21.55	+16.31	42.11	8.61	71.20	19 44.5
2392020.5	6.18	12.61	240.75	+19.70	-20.93	+16.45	42.56	8.50	62.29	20 21.0
2392021.5	6.13	12.69	240.56	+19.62	-20.30	+16.59	43.00	8.38	53.38	20 57.5
2392022.5	6.09	12.78	240.35	+19.55	-19.65	+16.74	43.45	8.26	44.50	21 33.9
2392023.5	6.05	12.86	240.12	+19.47	-18.98	+16.88	43.89	8.12	35.62	22 10.3
2392024.5	6.02	12.94	239.89	+19.39	-18.30	+17.02	44.34	7.98	26.76	22 46.6
2392025.5	5.98	13.02	239.64	+19.30	-17.61	+17.16	44.78	7.83	17.90	23 22.8
2392026.5	5.95	13.09	239.38	+19.22	-16.91	+17.29	45.23	7.67	9.06	23 59.0
2392027.5	5.91	13.17	239.11	+19.13	-16.19	+17.43	45.67	7.51	0.24	.. ..
2392028.5	5.88	13.24	238.82	+19.04	-15.47	+17.57	46.12	7.33	351.42	0 35.2
2392029.5	5.85	13.30	238.53	+18.95	-14.73	+17.70	46.56	7.15	342.62	1 11.3
2392030.5	5.82	13.37	238.22	+18.86	-13.97	+17.84	47.01	6.96	333.82	1 47.3
2392031.5	5.80	13.43	237.90	+18.77	-13.21	+17.97	47.45	6.77	325.04	2 23.3
2392032.5	5.77	13.49	237.58	+18.67	-12.44	+18.10	47.89	6.56	316.26	2 59.3
2392033.5	5.75	13.54	237.24	+18.57	-11.66	+18.23	48.34	6.36	307.50	3 35.2
2392034.5	5.73	13.60	236.89	+18.47	-10.86	+18.36	48.78	6.14	298.74	4 11.1
2392035.5	5.71	13.64	236.54	+18.37	-10.06	+18.49	49.22	5.92	289.99	4 47.0
2392036.5	5.69	13.69	236.18	+18.27	- 9.25	+18.61	49.66	5.70	281.25	5 22.8
2392037.5	5.67	13.73	235.81	+18.17	- 8.44	+18.74	50.11	5.46	272.52	5 58.6
2392038.5	5.66	13.76	235.43	+18.07	- 7.61	+18.87	50.55	5.23	263.79	6 34.4
2392039.5	5.64	13.79	235.05	+17.96	- 6.78	+18.99	50.99	4.99	255.07	7 10.1
2392040.5	5.63	13.82	234.66	+17.86	- 5.94	+19.11	51.43	4.74	246.35	7 45.9
2392041.5	5.62	13.84	234.27	+17.75	- 5.10	+19.23	51.87	4.50	237.64	8 21.6
2392042.5	5.62	13.86	233.87	+17.65	- 4.26	+19.35	52.31	4.25	228.93	8 57.3
2392043.5	5.61	13.87	233.47	+17.54	- 3.41	+19.47	52.75	3.99	220.22	9 33.0
2392044.5	5.61	13.88	233.07	+17.44	- 2.55	+19.59	53.19	3.74	211.52	10 08.6
2392045.5	5.61	13.89	232.66	+17.34	- 1.70	+19.71	53.63	3.48	202.81	10 44.3
2392046.5	5.61	13.89	232.26	+17.23	- 0.85	+19.82	54.07	3.22	194.11	11 20.0
2392047.5	5.61	13.88	231.86	+17.13	+ 0.01	+19.94	54.51	2.96	185.40	11 55.7
2392048.5	5.61	13.87	231.45	+17.03	+ 0.87	+20.05	54.95	2.71	176.70	12 31.4
2392049.5	5.62	13.86	231.05	+16.93	+ 1.72	+20.16	55.39	2.45	167.99	13 07.1
2392050.5	5.63	13.84	230.65	+16.83	+ 2.57	+20.27	55.83	2.19	159.28	13 42.8
2392051.5	5.64	13.81	230.26	+16.73	+ 3.42	+20.38	56.27	1.94	150.56	14 18.5
2392052.5	5.65	13.78	229.87	+16.63	+ 4.27	+20.49	56.71	1.69	141.84	14 54.3
2392053.5	5.66	13.75	229.48	+16.54	+ 5.11	+20.60	57.15	1.44	133.12	15 30.1
2392054.5	5.68	13.71	229.10	+16.45	+ 5.94	+20.70	57.59	1.19	124.39	16 05.9
2392055.5	5.69	13.67	228.72	+16.36	+ 6.77	+20.81	58.03	0.95	115.65	16 41.7
2392056.5	5.71	13.63	228.36	+16.27	+ 7.60	+20.91	58.47	0.71	106.91	17 17.6
2392057.5	5.73	13.58	227.99	+16.19	+ 8.41	+21.01	58.90	0.47	98.15	17 53.5
2392058.5	5.76	13.52	227.64	+16.11	+ 9.23	+21.11	59.34	0.24	89.39	18 29.4
2392059.5	5.78	13.47	227.30	+16.03	+10.03	+21.21	59.78	0.02	80.63	19 05.4
2392060.5	5.81	13.41	226.96	+15.96	+10.82	+21.31	60.22	359.80	71.85	19 41.5
2392061.5	5.83	13.34	226.63	+15.88	+11.61	+21.41	60.66	359.58	63.06	20 17.5
2392062.5	5.86	13.28	226.31	+15.82	+12.38	+21.50	61.09	359.38	54.26	20 53.6
2392063.5	5.89	13.21	226.01	+15.75	+13.15	+21.60	61.53	359.18	45.45	21 29.8
2392064.5	5.93	13.13	225.71	+15.69	+13.91	+21.69	61.97	358.98	36.63	22 06.0
2392065.5	5.96	13.06	225.43	+15.64	+14.65	+21.78	62.41	358.79	27.80	22 42.2
2392066.5	6.00	12.98	225.15	+15.58	+15.39	+21.88	62.84	358.61	18.96	23 18.5
2392067.5	6.03	12.90	224.89	+15.54	+16.11	+21.96	63.28	358.44	10.11	23 54.9
2392068.5	6.07	12.82	224.64	+15.49	+16.83	+22.05	63.72	358.28	1.24	.. ..
2392069.5	6.11	12.73	224.40	+15.45	+17.53	+22.14	64.15	358.12	352.36	0 31.3
2392070.5	6.15	12.65	224.17	+15.42	+18.22	+22.22	64.59	357.97	343.47	1 07.8
2392071.5	6.20	12.56	223.95	+15.38	+18.90	+22.31	65.03	357.83	334.57	1 44.3
2392072.5	6.24	12.47	223.75	+15.36	+19.56	+22.39	65.47	357.70	325.66	2 20.9
2392073.5	6.29	12.38	223.56	+15.33	+20.22	+22.47	65.90	357.57	316.73	2 57.5
2392074.5	6.33	12.29	223.38	+15.32	+20.86	+22.55	66.34	357.45	307.79	3 34.2
2392075.5	6.38	12.20	223.22	+15.30	+21.49	+22.63	66.78	357.35	298.83	4 10.9

PHYSICAL EPHEMERIS OF MARS, 1839

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_s °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2392780.5	6.48	12.01	277.09	+22.24	-23.90	+23.82	74.65	27.70	303.77	3	50.7
2392781.5	6.43	12.11	276.95	+22.23	-23.29	+23.87	75.09	27.64	294.81	4	27.4
2392782.5	6.37	12.21	276.80	+22.22	-22.67	+23.92	75.53	27.58	285.86	5	04.1
2392783.5	6.32	12.31	276.64	+22.21	-22.03	+23.97	75.96	27.51	276.93	5	40.7
2392784.5	6.27	12.41	276.46	+22.21	-21.38	+24.02	76.40	27.43	268.01	6	17.3
2392785.5	6.23	12.50	276.27	+22.20	-20.71	+24.06	76.84	27.35	259.11	6	53.8
2392786.5	6.18	12.60	276.06	+22.20	-20.03	+24.11	77.28	27.26	250.22	7	30.2
2392787.5	6.13	12.69	275.85	+22.19	-19.33	+24.15	77.71	27.16	241.34	8	06.6
2392788.5	6.09	12.78	275.61	+22.19	-18.62	+24.19	78.15	27.06	232.47	8	43.0
2392789.5	6.05	12.87	275.37	+22.19	-17.90	+24.23	78.59	26.95	223.62	9	19.2
2392790.5	6.01	12.96	275.11	+22.19	-17.16	+24.27	79.03	26.84	214.78	9	55.5
2392791.5	5.97	13.05	274.84	+22.19	-16.41	+24.31	79.46	26.72	205.95	10	31.6
2392792.5	5.93	13.13	274.55	+22.20	-15.65	+24.35	79.90	26.59	197.14	11	07.8
2392793.5	5.89	13.22	274.26	+22.20	-14.87	+24.38	80.34	26.46	188.34	11	43.8
2392794.5	5.86	13.29	273.95	+22.21	-14.09	+24.41	80.78	26.32	179.54	12	19.9
2392795.5	5.82	13.37	273.63	+22.21	-13.29	+24.45	81.22	26.18	170.76	12	55.8
2392796.5	5.79	13.44	273.30	+22.22	-12.48	+24.48	81.65	26.03	161.99	13	31.8
2392797.5	5.76	13.52	272.96	+22.23	-11.66	+24.50	82.09	25.87	153.23	14	07.7
2392798.5	5.73	13.58	272.61	+22.24	-10.83	+24.53	82.53	25.71	144.48	14	43.5
2392799.5	5.70	13.65	272.25	+22.25	-9.98	+24.56	82.97	25.55	135.74	15	19.3
2392800.5	5.68	13.71	271.88	+22.26	-9.13	+24.58	83.41	25.38	127.01	15	55.1
2392801.5	5.66	13.76	271.50	+22.27	-8.27	+24.60	83.85	25.20	118.28	16	30.9
2392802.5	5.63	13.82	271.12	+22.28	-7.41	+24.62	84.29	25.02	109.57	17	06.6
2392803.5	5.61	13.87	270.73	+22.30	-6.53	+24.64	84.73	24.84	100.86	17	42.3
2392804.5	5.60	13.91	270.33	+22.31	-5.65	+24.66	85.17	24.65	92.15	18	17.9
2392805.5	5.58	13.95	269.92	+22.33	-4.76	+24.68	85.61	24.46	83.45	18	53.6
2392806.5	5.57	13.99	269.51	+22.34	-3.86	+24.69	86.05	24.26	74.76	19	29.2
2392807.5	5.55	14.02	269.10	+22.35	-2.97	+24.71	86.49	24.06	66.07	20	04.8
2392808.5	5.54	14.05	268.68	+22.37	-2.06	+24.72	86.93	23.86	57.38	20	40.4
2392809.5	5.53	14.07	268.26	+22.39	-1.16	+24.73	87.37	23.66	48.70	21	16.0
2392810.5	5.53	14.09	267.83	+22.40	-0.25	+24.74	87.81	23.45	40.01	21	51.6
2392811.5	5.52	14.10	267.41	+22.42	+0.66	+24.74	88.25	23.24	31.33	22	27.2
2392812.5	5.52	14.11	266.98	+22.44	+1.57	+24.75	88.69	23.03	22.65	23	02.7
2392813.5	5.52	14.11	266.56	+22.45	+2.48	+24.75	89.13	22.82	13.97	23	38.3
2392814.5	5.52	14.11	266.13	+22.47	+3.39	+24.76	89.57	22.61	5.28	..	..
2392815.5	5.52	14.11	265.71	+22.49	+4.30	+24.76	90.01	22.40	356.60	0	14.0
2392816.5	5.52	14.10	265.29	+22.51	+5.21	+24.76	90.46	22.19	347.91	0	49.6
2392817.5	5.53	14.08	264.88	+22.52	+6.11	+24.75	90.90	21.98	339.21	1	25.2
2392818.5	5.54	14.06	264.47	+22.54	+7.01	+24.75	91.34	21.77	330.51	2	00.9
2392819.5	5.54	14.04	264.06	+22.56	+7.90	+24.74	91.78	21.57	321.81	2	36.6
2392820.5	5.56	14.01	263.66	+22.58	+8.79	+24.74	92.23	21.36	313.10	3	12.3
2392821.5	5.57	13.98	263.27	+22.60	+9.67	+24.73	92.67	21.16	304.38	3	48.0
2392822.5	5.58	13.94	262.89	+22.62	+10.54	+24.72	93.11	20.96	295.65	4	23.8
2392823.5	5.60	13.90	262.51	+22.64	+11.41	+24.71	93.56	20.76	286.92	4	59.6
2392824.5	5.62	13.86	262.14	+22.66	+12.27	+24.69	94.00	20.57	278.17	5	35.5
2392825.5	5.64	13.81	261.78	+22.68	+13.11	+24.68	94.45	20.38	269.42	6	11.4
2392826.5	5.66	13.76	261.43	+22.70	+13.95	+24.66	94.89	20.20	260.65	6	47.3
2392827.5	5.68	13.70	261.09	+22.72	+14.78	+24.64	95.34	20.02	251.88	7	23.3
2392828.5	5.71	13.65	260.76	+22.75	+15.60	+24.62	95.78	19.85	243.10	7	59.3
2392829.5	5.73	13.58	260.45	+22.77	+16.41	+24.60	96.23	19.68	234.30	8	35.4
2392830.5	5.76	13.52	260.14	+22.79	+17.20	+24.58	96.67	19.51	225.49	9	11.6
2392831.5	5.79	13.45	259.84	+22.82	+17.99	+24.55	97.12	19.36	216.67	9	47.7
2392832.5	5.82	13.38	259.56	+22.84	+18.76	+24.53	97.57	19.20	207.84	10	24.0
2392833.5	5.85	13.31	259.29	+22.87	+19.52	+24.50	98.01	19.06	198.99	11	00.3
2392834.5	5.88	13.24	259.04	+22.90	+20.27	+24.47	98.46	18.92	190.13	11	36.6
2392835.5	5.92	13.16	258.79	+22.92	+21.00	+24.44	98.91	18.79	181.26	12	13.1
2392836.5	5.95	13.08	258.56	+22.95	+21.72	+24.41	99.36	18.66	172.37	12	49.5
2392837.5	5.99	13.00	258.35	+22.98	+22.43	+24.37	99.80	18.54	163.47	13	26.1
2392838.5	6.03	12.92	258.14	+23.01	+23.12	+24.33	100.25	18.43	154.56	14	02.7
2392839.5	6.07	12.83	257.95	+23.04	+23.80	+24.30	100.70	18.33	145.63	14	39.3
2392840.5	6.11	12.75	257.78	+23.07	+24.47	+24.26	101.15	18.23	136.69	15	16.0

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_e °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2393550.5	5.86	13.28	314.50	+16.17	-20.93	+22.91	111.61	38.17	93.32	18	14.0
2393551.5	5.81	13.40	314.38	+16.22	-20.32	+22.83	112.07	38.16	84.34	18	50.8
2393552.5	5.76	13.52	314.25	+16.27	-19.70	+22.76	112.53	38.15	75.38	19	27.5
2393553.5	5.71	13.64	314.10	+16.33	-19.06	+22.67	112.99	38.13	66.43	20	04.2
2393554.5	5.66	13.76	313.95	+16.39	-18.41	+22.59	113.45	38.12	57.49	20	40.8
2393555.5	5.61	13.88	313.78	+16.46	-17.75	+22.51	113.91	38.11	48.56	21	17.4
2393556.5	5.56	13.99	313.60	+16.53	-17.08	+22.42	114.38	38.09	39.64	21	53.9
2393557.5	5.52	14.10	313.40	+16.61	-16.39	+22.33	114.84	38.07	30.74	22	30.4
2393558.5	5.48	14.22	313.20	+16.69	-15.70	+22.25	115.30	38.05	21.85	23	06.8
2393559.5	5.43	14.33	312.98	+16.77	-14.99	+22.16	115.77	38.03	12.97	23	43.2
2393560.5	5.39	14.44	312.75	+16.87	-14.27	+22.06	116.23	38.01	4.10	..	..
2393561.5	5.35	14.54	312.51	+16.96	-13.54	+21.97	116.70	37.98	355.24	0	19.5
2393562.5	5.32	14.65	312.26	+17.06	-12.79	+21.87	117.16	37.96	346.39	0	55.8
2393563.5	5.28	14.75	312.00	+17.16	-12.04	+21.78	117.63	37.93	337.56	1	32.0
2393564.5	5.24	14.84	311.73	+17.27	-11.28	+21.68	118.09	37.90	328.73	2	08.2
2393565.5	5.21	14.94	311.44	+17.38	-10.50	+21.58	118.56	37.86	319.91	2	44.4
2393566.5	5.18	15.03	311.15	+17.49	-9.72	+21.48	119.03	37.83	311.10	3	20.5
2393567.5	5.15	15.12	310.85	+17.61	-8.93	+21.38	119.50	37.79	302.30	3	56.6
2393568.5	5.12	15.21	310.54	+17.73	-8.13	+21.27	119.97	37.75	293.51	4	32.6
2393569.5	5.09	15.29	310.22	+17.85	-7.32	+21.16	120.44	37.71	284.73	5	08.6
2393570.5	5.07	15.36	309.90	+17.98	-6.50	+21.06	120.91	37.67	275.95	5	44.6
2393571.5	5.04	15.44	309.56	+18.11	-5.68	+20.95	121.38	37.62	267.19	6	20.5
2393572.5	5.02	15.50	309.22	+18.24	-4.85	+20.84	121.85	37.57	258.42	6	56.4
2393573.5	5.00	15.57	308.87	+18.37	-4.01	+20.73	122.32	37.52	249.67	7	32.3
2393574.5	4.98	15.63	308.52	+18.51	-3.17	+20.61	122.79	37.47	240.92	8	08.2
2393575.5	4.96	15.68	308.16	+18.64	-2.32	+20.50	123.26	37.41	232.17	8	44.0
2393576.5	4.95	15.73	307.80	+18.78	-1.46	+20.38	123.74	37.35	223.43	9	19.9
2393577.5	4.93	15.78	307.43	+18.92	-0.61	+20.26	124.21	37.29	214.69	9	55.7
2393578.5	4.92	15.82	307.06	+19.06	+0.25	+20.14	124.69	37.23	205.96	10	31.5
2393579.5	4.91	15.85	306.69	+19.20	+1.11	+20.02	125.16	37.17	197.23	11	07.3
2393580.5	4.90	15.88	306.32	+19.34	+1.98	+19.90	125.64	37.10	188.49	11	43.1
2393581.5	4.90	15.90	305.94	+19.48	+2.84	+19.77	126.12	37.04	179.76	12	18.9
2393582.5	4.89	15.92	305.57	+19.62	+3.70	+19.65	126.59	36.97	171.03	12	54.7
2393583.5	4.89	15.93	305.19	+19.77	+4.57	+19.52	127.07	36.90	162.30	13	30.5
2393584.5	4.88	15.94	304.82	+19.90	+5.43	+19.39	127.55	36.82	153.56	14	06.3
2393585.5	4.88	15.94	304.45	+20.04	+6.29	+19.26	128.03	36.75	144.82	14	42.1
2393586.5	4.89	15.94	304.09	+20.18	+7.14	+19.13	128.51	36.68	136.08	15	18.0
2393587.5	4.89	15.93	303.72	+20.32	+7.99	+18.99	128.99	36.60	127.33	15	53.9
2393588.5	4.89	15.91	303.37	+20.45	+8.84	+18.86	129.47	36.53	118.58	16	29.8
2393589.5	4.90	15.89	303.01	+20.58	+9.68	+18.72	129.95	36.46	109.82	17	05.7
2393590.5	4.91	15.87	302.67	+20.71	+10.51	+18.59	130.44	36.38	101.06	17	41.6
2393591.5	4.91	15.84	302.33	+20.84	+11.34	+18.45	130.92	36.31	92.29	18	17.6
2393592.5	4.93	15.80	302.00	+20.97	+12.16	+18.31	131.41	36.23	83.51	18	53.6
2393593.5	4.94	15.77	301.68	+21.09	+12.97	+18.16	131.89	36.16	74.72	19	29.7
2393594.5	4.95	15.72	301.36	+21.21	+13.77	+18.02	132.38	36.09	65.92	20	05.8
2393595.5	4.97	15.68	301.05	+21.33	+14.57	+17.88	132.86	36.02	57.12	20	41.9
2393596.5	4.98	15.62	300.76	+21.45	+15.35	+17.73	133.35	35.95	48.30	21	18.1
2393597.5	5.00	15.57	300.47	+21.56	+16.12	+17.58	133.84	35.88	39.48	21	54.4
2393598.5	5.02	15.51	300.20	+21.67	+16.89	+17.43	134.33	35.81	30.64	22	30.6
2393599.5	5.04	15.45	299.93	+21.77	+17.64	+17.28	134.81	35.75	21.79	23	07.0
2393600.5	5.06	15.38	299.68	+21.88	+18.38	+17.13	135.30	35.69	12.93	23	43.4
2393601.5	5.08	15.31	299.44	+21.98	+19.11	+16.98	135.80	35.63	4.06	..	..
2393602.5	5.11	15.24	299.21	+22.07	+19.83	+16.82	136.29	35.57	355.17	0	19.8
2393603.5	5.13	15.16	298.99	+22.16	+20.53	+16.66	136.78	35.52	346.27	0	56.3
2393604.5	5.16	15.09	298.79	+22.25	+21.22	+16.51	137.27	35.46	337.36	1	32.8
2393605.5	5.19	15.01	298.60	+22.34	+21.90	+16.35	137.77	35.42	328.44	2	09.5
2393606.5	5.22	14.92	298.42	+22.42	+22.56	+16.19	138.26	35.37	319.50	2	46.1
2393607.5	5.25	14.84	298.26	+22.50	+23.21	+16.03	138.76	35.33	310.55	3	22.9
2393608.5	5.28	14.75	298.11	+22.58	+23.85	+15.86	139.25	35.29	301.58	3	59.6
2393609.5	5.31	14.66	297.97	+22.65	+24.47	+15.70	139.75	35.26	292.60	4	36.5
2393610.5	5.34	14.57	297.85	+22.72	+25.08	+15.53	140.25	35.23	283.61	5	13.4

PHYSICAL EPHEMERIS OF MARS, 1843

Julian Day	Light- time m	Diameter "	A_E+180° °	D_E °	A_S-A_E °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2394325.5	4.95	15.72	358.47	+ 0.43	-21.87	+10.38	154.52	29.96	190.84	11 34.2
2394326.5	4.90	15.89	358.47	+ 0.49	-21.39	+10.18	155.04	29.97	181.74	12 11.5
2394327.5	4.85	16.05	358.47	+ 0.55	-20.89	+ 9.98	155.56	29.98	172.65	12 48.8
2394328.5	4.80	16.21	358.45	+ 0.61	-20.39	+ 9.77	156.08	30.00	163.57	13 26.0
2394329.5	4.75	16.38	358.42	+ 0.69	-19.87	+ 9.57	156.61	30.03	154.50	14 03.2
2394330.5	4.71	16.54	358.38	+ 0.76	-19.34	+ 9.36	157.13	30.06	145.44	14 40.4
2394331.5	4.66	16.70	358.34	+ 0.85	-18.80	+ 9.16	157.66	30.10	136.40	15 17.4
2394332.5	4.62	16.87	358.28	+ 0.94	-18.25	+ 8.95	158.19	30.14	127.36	15 54.5
2394333.5	4.57	17.03	358.20	+ 1.04	-17.69	+ 8.74	158.72	30.19	118.33	16 31.5
2394334.5	4.53	17.19	358.12	+ 1.14	-17.11	+ 8.53	159.25	30.25	109.32	17 08.5
2394335.5	4.49	17.35	358.03	+ 1.25	-16.53	+ 8.32	159.78	30.31	100.31	17 45.4
2394336.5	4.45	17.50	357.93	+ 1.36	-15.93	+ 8.11	160.31	30.37	91.32	18 22.2
2394337.5	4.41	17.66	357.81	+ 1.49	-15.33	+ 7.90	160.84	30.44	82.33	18 59.1
2394338.5	4.37	17.81	357.69	+ 1.61	-14.71	+ 7.69	161.37	30.52	73.36	19 35.8
2394339.5	4.33	17.97	357.55	+ 1.75	-14.08	+ 7.47	161.91	30.60	64.39	20 12.6
2394340.5	4.30	18.12	357.41	+ 1.88	-13.44	+ 7.26	162.44	30.68	55.44	20 49.3
2394341.5	4.26	18.26	357.25	+ 2.03	-12.79	+ 7.04	162.98	30.77	46.50	21 25.9
2394342.5	4.23	18.41	357.08	+ 2.18	-12.13	+ 6.83	163.51	30.87	37.56	22 02.5
2394343.5	4.20	18.55	356.91	+ 2.33	-11.46	+ 6.61	164.05	30.97	28.64	22 39.1
2394344.5	4.17	18.68	356.72	+ 2.49	-10.78	+ 6.39	164.59	31.07	19.72	23 15.6
2394345.5	4.14	18.82	356.53	+ 2.65	-10.09	+ 6.17	165.13	31.18	10.82	23 52.1
2394346.5	4.11	18.94	356.32	+ 2.82	-9.39	+ 5.95	165.67	31.29	1.92	00 . . .
2394347.5	4.08	19.07	356.11	+ 3.00	- 8.68	+ 5.73	166.21	31.40	353.03	0 28.6
2394348.5	4.06	19.19	355.89	+ 3.17	- 7.96	+ 5.51	166.75	31.52	344.15	1 05.0
2394349.5	4.03	19.30	355.67	+ 3.35	- 7.24	+ 5.28	167.29	31.64	335.27	1 41.4
2394350.5	4.01	19.41	355.43	+ 3.54	- 6.50	+ 5.06	167.84	31.77	326.41	2 17.8
2394351.5	3.99	19.52	355.19	+ 3.72	- 5.76	+ 4.84	168.38	31.89	317.54	2 54.1
2394352.5	3.97	19.61	354.94	+ 3.91	- 5.02	+ 4.61	168.93	32.02	308.69	3 30.4
2394353.5	3.95	19.71	354.69	+ 4.10	- 4.27	+ 4.39	169.48	32.15	299.84	4 06.7
2394354.5	3.93	19.79	354.43	+ 4.29	- 3.51	+ 4.16	170.02	32.28	290.99	4 43.0
2394355.5	3.92	19.87	354.17	+ 4.49	- 2.75	+ 3.93	170.57	32.42	282.15	5 19.2
2394356.5	3.90	19.94	353.90	+ 4.68	- 1.98	+ 3.71	171.12	32.55	273.31	5 55.5
2394357.5	3.89	20.01	353.64	+ 4.88	- 1.21	+ 3.48	171.67	32.68	264.47	6 31.7
2394358.5	3.88	20.07	353.36	+ 5.07	- 0.43	+ 3.25	172.22	32.82	255.64	7 07.9
2394359.5	3.87	20.12	353.09	+ 5.27	+ 0.34	+ 3.02	172.78	32.95	246.81	7 44.2
2394360.5	3.86	20.17	352.82	+ 5.47	+ 1.12	+ 2.79	173.33	33.08	237.98	8 20.4
2394361.5	3.85	20.20	352.54	+ 5.66	+ 1.90	+ 2.56	173.88	33.21	229.14	8 56.6
2394362.5	3.85	20.24	352.27	+ 5.85	+ 2.68	+ 2.33	174.44	33.34	220.31	9 32.8
2394363.5	3.84	20.26	351.99	+ 6.04	+ 3.46	+ 2.09	175.00	33.47	211.48	10 09.0
2394364.5	3.84	20.28	351.72	+ 6.23	+ 4.24	+ 1.86	175.55	33.60	202.64	10 45.3
2394365.5	3.84	20.29	351.45	+ 6.42	+ 5.02	+ 1.63	176.11	33.72	193.81	11 21.5
2394366.5	3.84	20.29	351.18	+ 6.60	+ 5.79	+ 1.39	176.67	33.85	184.97	11 57.8
2394367.5	3.84	20.29	350.92	+ 6.78	+ 6.57	+ 1.16	177.23	33.97	176.12	12 34.0
2394368.5	3.84	20.28	350.66	+ 6.96	+ 7.34	+ 0.92	177.79	34.08	167.28	13 10.3
2394369.5	3.84	20.26	350.40	+ 7.13	+ 8.10	+ 0.69	178.35	34.20	158.42	13 46.6
2394370.5	3.85	20.23	350.15	+ 7.30	+ 8.86	+ 0.45	178.92	34.31	149.56	14 23.0
2394371.5	3.85	20.20	349.91	+ 7.46	+ 9.62	+ 0.22	179.48	34.42	140.70	14 59.4
2394372.5	3.86	20.17	349.67	+ 7.62	+10.37	- 0.02	180.05	34.52	131.83	15 35.8
2394373.5	3.87	20.12	349.43	+ 7.77	+11.12	- 0.26	180.61	34.62	122.95	16 12.2
2394374.5	3.88	20.07	349.21	+ 7.92	+11.86	- 0.49	181.18	34.72	114.07	16 48.6
2394375.5	3.89	20.02	348.99	+ 8.07	+12.59	- 0.73	181.75	34.81	105.17	17 25.1
2394376.5	3.90	19.96	348.78	+ 8.20	+13.32	- 0.97	182.31	34.90	96.27	18 01.7
2394377.5	3.91	19.89	348.58	+ 8.33	+14.04	- 1.21	182.88	34.98	87.36	18 38.3
2394378.5	3.93	19.82	348.39	+ 8.46	+14.75	- 1.45	183.45	35.06	78.44	19 14.9
2394379.5	3.94	19.74	348.21	+ 8.58	+15.45	- 1.68	184.03	35.13	69.51	19 51.6
2394380.5	3.96	19.66	348.04	+ 8.69	+16.14	- 1.92	184.60	35.20	60.57	20 28.3
2394381.5	3.98	19.57	347.88	+ 8.79	+16.82	- 2.16	185.17	35.27	51.62	21 05.0
2394382.5	4.00	19.48	347.73	+ 8.89	+17.49	- 2.40	185.75	35.33	42.65	21 41.8
2394383.5	4.02	19.38	347.59	+ 8.98	+18.15	- 2.64	186.32	35.39	33.68	22 18.7
2394384.5	4.04	19.29	347.47	+ 9.06	+18.80	- 2.88	186.90	35.44	24.69	22 55.6
2394385.5	4.06	19.18	347.35	+ 9.14	+19.44	- 3.12	187.47	35.48	15.69	23 32.6

PHYSICAL EPHEMERIS OF MARS, 1845

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Julian Day	Light- time m	Diameter "	A_s+180° °	D_E °	A_s-A_E °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2395130.5	3.64	21.38	65.95	-18.83	-26.30	-16.40	222.38	348.26	351.71	0	34.0
2395131.5	3.61	21.57	65.97	-18.77	-25.71	-16.60	223.01	348.24	342.58	1	11.5
2395132.5	3.58	21.75	65.99	-18.71	-25.10	-16.79	223.63	348.23	333.47	1	48.9
2395133.5	3.55	21.94	65.98	-18.65	-24.48	-16.99	224.25	348.23	324.37	2	26.2
2395134.5	3.52	22.12	65.97	-18.58	-23.84	-17.19	224.88	348.24	315.29	3	03.5
2395135.5	3.49	22.30	65.94	-18.52	-23.19	-17.38	225.50	348.25	306.22	3	40.7
2395136.5	3.46	22.48	65.89	-18.45	-22.53	-17.57	226.13	348.27	297.16	4	17.8
2395137.5	3.44	22.65	65.83	-18.39	-21.84	-17.76	226.75	348.30	288.12	4	54.9
2395138.5	3.41	22.82	65.76	-18.32	-21.14	-17.95	227.38	348.34	279.09	5	32.0
2395139.5	3.39	22.99	65.68	-18.26	-20.43	-18.13	228.01	348.39	270.07	6	09.0
2395140.5	3.36	23.16	65.58	-18.19	-19.70	-18.32	228.63	348.44	261.06	6	45.9
2395141.5	3.34	23.31	65.47	-18.12	-18.96	-18.50	229.26	348.51	252.07	7	22.8
2395142.5	3.32	23.47	65.35	-18.05	-18.20	-18.68	229.89	348.58	243.09	7	59.6
2395143.5	3.30	23.62	65.21	-17.98	-17.43	-18.86	230.52	348.66	234.13	8	36.3
2395144.5	3.28	23.76	65.06	-17.91	-16.64	-19.03	231.14	348.74	225.17	9	13.1
2395145.5	3.26	23.90	64.90	-17.85	-15.84	-19.21	231.77	348.83	216.23	9	49.7
2395146.5	3.24	24.03	64.73	-17.78	-15.03	-19.38	232.40	348.93	207.29	10	26.3
2395147.5	3.22	24.16	64.55	-17.71	-14.21	-19.55	233.03	349.04	198.37	11	02.9
2395148.5	3.21	24.28	64.36	-17.65	-13.37	-19.71	233.66	349.15	189.46	11	39.5
2395149.5	3.19	24.39	64.16	-17.58	-12.52	-19.88	234.29	349.27	180.56	12	15.9
2395150.5	3.18	24.50	63.94	-17.51	-11.66	-20.04	234.92	349.40	171.67	12	52.4
2395151.5	3.17	24.59	63.72	-17.45	-10.79	-20.20	235.55	349.53	162.78	13	28.8
2395152.5	3.15	24.68	63.50	-17.39	-9.91	-20.36	236.18	349.67	153.90	14	05.2
2395153.5	3.14	24.76	63.26	-17.33	-9.02	-20.52	236.82	349.81	145.03	14	41.6
2395154.5	3.13	24.83	63.02	-17.27	-8.12	-20.67	237.45	349.95	136.17	15	17.9
2395155.5	3.13	24.90	62.77	-17.21	-7.22	-20.82	238.08	350.10	127.31	15	54.2
2395156.5	3.12	24.95	62.52	-17.15	-6.31	-20.97	238.71	350.25	118.46	16	30.5
2395157.5	3.11	25.00	62.26	-17.10	-5.39	-21.11	239.34	350.41	109.61	17	06.8
2395158.5	3.11	25.04	62.00	-17.05	-4.47	-21.26	239.98	350.57	100.77	17	43.0
2395159.5	3.11	25.06	61.73	-17.00	-3.54	-21.40	240.61	350.73	91.92	18	19.3
2395160.5	3.10	25.08	61.46	-16.95	-2.61	-21.54	241.24	350.90	83.08	18	55.5
2395161.5	3.10	25.09	61.19	-16.91	-1.67	-21.67	241.88	351.06	74.24	19	31.8
2395162.5	3.10	25.09	60.92	-16.86	-0.74	-21.81	242.51	351.23	65.41	20	08.0
2395163.5	3.10	25.08	60.65	-16.82	+ 0.20	-21.94	243.14	351.39	56.57	20	44.3
2395164.5	3.11	25.06	60.38	-16.79	+ 1.14	-22.07	243.78	351.56	47.73	21	20.5
2395165.5	3.11	25.03	60.11	-16.75	+ 2.08	-22.19	244.41	351.73	38.89	21	56.8
2395166.5	3.11	25.00	59.85	-16.72	+ 3.02	-22.31	245.05	351.90	30.05	22	33.0
2395167.5	3.12	24.95	59.58	-16.70	+ 3.96	-22.43	245.68	352.06	21.20	23	09.3
2395168.5	3.13	24.90	59.32	-16.67	+ 4.89	-22.55	246.31	352.22	12.35	23	45.6
2395169.5	3.14	24.83	59.07	-16.65	+ 5.83	-22.66	246.95	352.38	3.50	..	..
2395170.5	3.14	24.76	58.81	-16.64	+ 6.76	-22.78	247.58	352.54	354.64	0	22.0
2395171.5	3.15	24.68	58.57	-16.62	+ 7.68	-22.88	248.22	352.70	345.78	0	58.3
2395172.5	3.17	24.59	58.33	-16.62	+ 8.60	-22.99	248.85	352.85	336.91	1	34.7
2395173.5	3.18	24.49	58.09	-16.61	+ 9.51	-23.09	249.49	353.00	328.03	2	11.1
2395174.5	3.19	24.38	57.87	-16.61	+10.42	-23.19	250.12	353.14	319.15	2	47.6
2395175.5	3.21	24.27	57.65	-16.61	+11.32	-23.29	250.76	353.28	310.25	3	24.0
2395176.5	3.22	24.15	57.44	-16.62	+12.21	-23.38	251.39	353.41	301.35	4	00.6
2395177.5	3.24	24.02	57.24	-16.63	+13.10	-23.47	252.02	353.54	292.44	4	37.1
2395178.5	3.26	23.88	57.05	-16.65	+13.97	-23.56	252.66	353.66	283.51	5	13.7
2395179.5	3.28	23.74	56.87	-16.67	+14.84	-23.65	253.29	353.77	274.58	5	50.4
2395180.5	3.30	23.60	56.71	-16.69	+15.69	-23.73	253.93	353.88	265.63	6	27.1
2395181.5	3.32	23.45	56.55	-16.72	+16.53	-23.81	254.56	353.98	256.68	7	03.9
2395182.5	3.34	23.29	56.41	-16.76	+17.37	-23.88	255.20	354.08	247.71	7	40.7
2395183.5	3.37	23.13	56.27	-16.79	+18.19	-23.95	255.83	354.16	238.73	8	17.5
2395184.5	3.39	22.96	56.15	-16.83	+19.00	-24.02	256.46	354.24	229.73	8	54.4
2395185.5	3.42	22.79	56.04	-16.88	+19.80	-24.09	257.10	354.31	220.73	9	31.4
2395186.5	3.44	22.62	55.95	-16.93	+20.58	-24.15	257.73	354.37	211.71	10	08.4
2395187.5	3.47	22.44	55.87	-16.98	+21.36	-24.21	258.36	354.43	202.67	10	45.5
2395188.5	3.50	22.26	55.80	-17.04	+22.12	-24.27	259.00	354.47	193.63	11	22.7
2395189.5	3.53	22.08	55.74	-17.10	+22.86	-24.33	259.63	354.51	184.57	11	59.9
2395190.5	3.56	21.89	55.70	-17.17	+23.60	-24.38	260.26	354.54	175.49	12	37.1

Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2395935.5	4.08	19.09	143.74	-12.61	-25.23	-22.06	296.26	321.61	141.84	14 55.1
2395936.5	4.05	19.21	143.67	-12.67	-24.52	-21.94	296.86	321.60	132.81	15 32.1
2395937.5	4.03	19.32	143.58	-12.74	-23.80	-21.81	297.46	321.60	123.79	16 09.1
2395938.5	4.01	19.44	143.48	-12.82	-23.07	-21.69	298.06	321.59	114.79	16 45.9
2395939.5	3.98	19.55	143.37	-12.90	-22.33	-21.56	298.66	321.58	105.81	17 22.8
2395940.5	3.96	19.65	143.24	-12.99	-21.57	-21.43	299.26	321.57	96.83	17 59.5
2395941.5	3.94	19.75	143.10	-13.09	-20.80	-21.30	299.85	321.56	87.87	18 36.3
2395942.5	3.92	19.85	142.94	-13.19	-20.02	-21.16	300.45	321.55	78.92	19 12.9
2395943.5	3.90	19.94	142.77	-13.29	-19.23	-21.03	301.04	321.54	69.99	19 49.5
2395944.5	3.89	20.03	142.59	-13.41	-18.43	-20.89	301.64	321.53	61.06	20 26.1
2395945.5	3.87	20.11	142.40	-13.53	-17.62	-20.75	302.23	321.52	52.15	21 02.6
2395946.5	3.86	20.19	142.19	-13.65	-16.81	-20.60	302.83	321.51	43.25	21 39.1
2395947.5	3.84	20.27	141.98	-13.78	-15.98	-20.46	303.42	321.50	34.36	22 15.5
2395948.5	3.83	20.33	141.75	-13.92	-15.14	-20.31	304.01	321.49	25.49	22 51.8
2395949.5	3.82	20.39	141.51	-14.06	-14.29	-20.16	304.60	321.49	16.62	23 28.2
2395950.5	3.81	20.45	141.27	-14.20	-13.44	-20.01	305.19	321.48	7.76	.. .. .
2395951.5	3.80	20.50	141.01	-14.35	-12.57	-19.86	305.78	321.47	358.91	0 04.5
2395952.5	3.79	20.54	140.74	-14.50	-11.71	-19.71	306.36	321.47	350.07	0 40.7
2395953.5	3.78	20.57	140.47	-14.66	-10.83	-19.55	306.95	321.46	341.24	1 16.9
2395954.5	3.78	20.60	140.19	-14.82	-9.95	-19.39	307.54	321.46	332.42	1 53.1
2395955.5	3.78	20.62	139.90	-14.98	-9.06	-19.23	308.12	321.46	323.60	2 29.3
2395956.5	3.77	20.63	139.60	-15.15	-8.17	-19.07	308.71	321.45	314.79	3 05.4
2395957.5	3.77	20.64	139.30	-15.31	-7.28	-18.91	309.29	321.45	305.98	3 41.5
2395958.5	3.77	20.63	138.99	-15.48	-6.38	-18.75	309.87	321.46	297.18	4 17.6
2395959.5	3.77	20.62	138.68	-15.65	-5.49	-18.58	310.45	321.46	288.38	4 53.7
2395960.5	3.78	20.61	138.37	-15.83	-4.59	-18.41	311.03	321.46	279.58	5 29.7
2395961.5	3.78	20.58	138.05	-16.00	-3.68	-18.25	311.61	321.47	270.79	6 05.8
2395962.5	3.79	20.55	137.73	-16.17	-2.78	-18.07	312.19	321.48	262.00	6 41.8
2395963.5	3.80	20.51	137.41	-16.35	-1.88	-17.90	312.77	321.48	253.21	7 17.8
2395964.5	3.81	20.46	137.09	-16.52	-0.98	-17.73	313.35	321.49	244.42	7 53.9
2395965.5	3.82	20.40	136.77	-16.70	-0.09	-17.56	313.92	321.51	235.63	8 29.9
2395966.5	3.83	20.34	136.45	-16.87	+ 0.81	-17.38	314.50	321.52	226.84	9 06.0
2395967.5	3.84	20.27	136.13	-17.04	+ 1.70	-17.20	315.07	321.53	218.05	9 42.0
2395968.5	3.86	20.19	135.82	-17.21	+ 2.58	-17.02	315.64	321.55	209.25	10 18.1
2395969.5	3.87	20.10	135.51	-17.38	+ 3.46	-16.84	316.22	321.56	200.45	10 54.2
2395970.5	3.89	20.01	135.20	-17.54	+ 4.33	-16.66	316.79	321.58	191.65	11 30.3
2395971.5	3.91	19.91	134.90	-17.71	+ 5.20	-16.48	317.36	321.60	182.84	12 06.4
2395972.5	3.93	19.81	134.60	-17.87	+ 6.06	-16.30	317.93	321.62	174.02	12 42.6
2395973.5	3.95	19.69	134.31	-18.02	+ 6.91	-16.11	318.49	321.64	165.19	13 18.8
2395974.5	3.98	19.58	134.03	-18.18	+ 7.75	-15.93	319.06	321.66	156.36	13 55.1
2395975.5	4.00	19.45	133.75	-18.33	+ 8.58	-15.74	319.63	321.68	147.52	14 31.3
2395976.5	4.03	19.32	133.49	-18.47	+ 9.39	-15.55	320.19	321.70	138.67	15 07.6
2395977.5	4.06	19.19	133.23	-18.61	+10.20	-15.36	320.76	321.72	129.82	15 44.0
2395978.5	4.09	19.05	132.99	-18.75	+11.00	-15.17	321.32	321.74	120.95	16 20.4
2395979.5	4.12	18.91	132.75	-18.89	+11.78	-14.98	321.88	321.76	112.07	16 56.8
2395980.5	4.15	18.76	132.52	-19.01	+12.55	-14.79	322.45	321.78	103.18	17 33.3
2395981.5	4.18	18.61	132.31	-19.14	+13.31	-14.59	323.01	321.80	94.27	18 09.9
2395982.5	4.22	18.46	132.11	-19.26	+14.06	-14.40	323.57	321.82	85.36	18 46.5
2395983.5	4.25	18.30	131.92	-19.37	+14.79	-14.21	324.13	321.83	76.43	19 23.1
2395984.5	4.29	18.14	131.74	-19.48	+15.50	-14.01	324.68	321.85	67.49	19 59.9
2395985.5	4.33	17.98	131.57	-19.59	+16.21	-13.81	325.24	321.86	58.54	20 36.6
2395986.5	4.37	17.82	131.42	-19.68	+16.89	-13.62	325.80	321.88	49.58	21 13.5
2395987.5	4.41	17.65	131.28	-19.78	+17.57	-13.42	326.35	321.89	40.60	21 50.3
2395988.5	4.45	17.48	131.16	-19.87	+18.22	-13.22	326.91	321.90	31.61	22 27.3
2395989.5	4.50	17.31	131.04	-19.95	+18.87	-13.02	327.46	321.91	22.60	23 04.3
2395990.5	4.54	17.14	130.94	-20.03	+19.50	-12.82	328.01	321.92	13.58	23 41.3
2395991.5	4.59	16.97	130.86	-20.10	+20.11	-12.62	328.56	321.92	4.55	.. .. .
2395992.5	4.63	16.80	130.78	-20.17	+20.71	-12.41	329.11	321.93	355.50	0 18.4
2395993.5	4.68	16.63	130.72	-20.24	+21.29	-12.21	329.66	321.93	346.44	0 55.6
2395994.5	4.73	16.46	130.68	-20.30	+21.86	-12.01	330.21	321.93	337.37	1 32.9
2395995.5	4.78	16.29	130.64	-20.35	+22.41	-11.80	330.76	321.93	328.28	2 10.2

Julian Day	Light- time m	Diameter "	A_s+180° °	D_s °	A_s-A_z °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2396715.5	5.24	14.84	191.28	+ 4.70	-21.90	- 4.86	348.33	336.86	189.75	11 38.4
2396716.5	5.21	14.94	191.16	+ 4.59	-21.31	- 4.64	348.85	336.78	180.76	12 15.3
2396717.5	5.18	15.03	191.03	+ 4.47	-20.71	- 4.43	349.37	336.69	171.79	12 52.0
2396718.5	5.15	15.11	190.89	+ 4.35	-20.10	- 4.22	349.88	336.60	162.83	13 28.8
2396719.5	5.12	15.20	190.74	+ 4.22	-19.47	- 4.01	350.40	336.49	153.89	14 05.4
2396720.5	5.09	15.28	190.57	+ 4.09	-18.84	- 3.79	350.91	336.38	144.95	14 42.1
2396721.5	5.07	15.37	190.39	+ 3.94	-18.19	- 3.58	351.42	336.27	136.03	15 18.6
2396722.5	5.04	15.44	190.20	+ 3.80	-17.54	- 3.37	351.93	336.14	127.12	15 55.1
2396723.5	5.02	15.52	190.00	+ 3.65	-16.87	- 3.16	352.44	336.01	118.22	16 31.6
2396724.5	4.99	15.59	189.78	+ 3.49	-16.19	- 2.95	352.95	335.87	109.33	17 08.0
2396725.5	4.97	15.66	189.56	+ 3.33	-15.50	- 2.73	353.46	335.73	100.46	17 44.4
2396726.5	4.95	15.72	189.32	+ 3.16	-14.80	- 2.52	353.97	335.58	91.59	18 20.7
2396727.5	4.93	15.78	189.07	+ 2.99	-14.09	- 2.31	354.47	335.42	82.73	18 57.0
2396728.5	4.92	15.84	188.82	+ 2.81	-13.38	- 2.10	354.98	335.26	73.88	19 33.3
2396729.5	4.90	15.89	188.55	+ 2.63	-12.65	- 1.89	355.49	335.10	65.05	20 09.5
2396730.5	4.89	15.93	188.28	+ 2.44	-11.92	- 1.68	355.99	334.92	56.22	20 45.7
2396731.5	4.87	15.98	187.99	+ 2.26	-11.18	- 1.47	356.49	334.75	47.40	21 21.8
2396732.5	4.86	16.01	187.70	+ 2.06	-10.43	- 1.26	357.00	334.57	38.58	21 57.9
2396733.5	4.85	16.04	187.40	+ 1.87	- 9.67	- 1.05	357.50	334.38	29.78	22 34.0
2396734.5	4.84	16.07	187.09	+ 1.67	- 8.91	- 0.84	358.00	334.20	20.98	23 10.0
2396735.5	4.84	16.09	186.78	+ 1.47	- 8.14	- 0.63	358.50	334.01	12.19	23 46.1
2396736.5	4.83	16.11	186.46	+ 1.27	- 7.37	- 0.42	359.00	333.82	3.40	.. ..
2396737.5	4.83	16.12	186.13	+ 1.07	- 6.59	- 0.21	359.50	333.62	354.62	0 22.1
2396738.5	4.83	16.12	185.80	+ 0.87	- 5.81	0.00	0.00	333.42	345.84	0 58.1
2396739.5	4.83	16.12	185.47	+ 0.66	- 5.02	+ 0.21	0.49	333.23	337.06	1 34.0
2396740.5	4.83	16.11	185.14	+ 0.46	- 4.24	+ 0.42	0.99	333.03	328.29	2 10.0
2396741.5	4.84	16.10	184.80	+ 0.25	- 3.45	+ 0.62	1.49	332.83	319.52	2 46.0
2396742.5	4.84	16.08	184.46	+ 0.05	- 2.66	+ 0.83	1.98	332.64	310.75	3 21.9
2396743.5	4.85	16.06	184.12	- 0.15	- 1.87	+ 1.04	2.48	332.44	301.98	3 57.9
2396744.5	4.86	16.02	183.78	- 0.35	- 1.08	+ 1.24	2.97	332.25	293.21	4 33.8
2396745.5	4.87	15.99	183.44	- 0.55	- 0.29	+ 1.45	3.46	332.05	284.44	5 09.8
2396746.5	4.88	15.95	183.10	- 0.75	+ 0.49	+ 1.65	3.95	331.86	275.67	5 45.8
2396747.5	4.90	15.90	182.76	- 0.95	+ 1.27	+ 1.86	4.45	331.67	266.89	6 21.8
2396748.5	4.91	15.85	182.43	- 1.14	+ 2.05	+ 2.06	4.94	331.49	258.11	6 57.8
2396749.5	4.93	15.79	182.10	- 1.32	+ 2.83	+ 2.27	5.43	331.31	249.33	7 33.8
2396750.5	4.95	15.72	181.78	- 1.51	+ 3.60	+ 2.47	5.91	331.13	240.54	8 09.8
2396751.5	4.97	15.66	181.46	- 1.69	+ 4.36	+ 2.68	6.40	330.95	231.74	8 45.9
2396752.5	5.00	15.58	181.14	- 1.86	+ 5.12	+ 2.88	6.89	330.78	222.94	9 22.0
2396753.5	5.02	15.50	180.84	- 2.03	+ 5.87	+ 3.08	7.38	330.62	214.14	9 58.1
2396754.5	5.05	15.42	180.54	- 2.20	+ 6.61	+ 3.28	7.86	330.46	205.32	10 34.2
2396755.5	5.08	15.34	180.24	- 2.36	+ 7.35	+ 3.49	8.35	330.30	196.50	11 10.4
2396756.5	5.11	15.25	179.96	- 2.52	+ 8.08	+ 3.69	8.83	330.15	187.67	11 46.7
2396757.5	5.14	15.15	179.68	- 2.66	+ 8.80	+ 3.89	9.32	330.01	178.84	12 22.9
2396758.5	5.17	15.06	179.41	- 2.81	+ 9.51	+ 4.09	9.80	329.87	169.99	12 59.2
2396759.5	5.21	14.95	179.15	- 2.95	+10.21	+ 4.29	10.28	329.74	161.13	13 35.6
2396760.5	5.24	14.85	178.90	- 3.08	+10.90	+ 4.49	10.76	329.61	152.27	14 11.9
2396761.5	5.28	14.74	178.66	- 3.20	+11.58	+ 4.68	11.25	329.49	143.39	14 48.4
2396762.5	5.32	14.64	178.43	- 3.32	+12.25	+ 4.88	11.73	329.37	134.50	15 24.8
2396763.5	5.36	14.52	178.21	- 3.43	+12.91	+ 5.08	12.21	329.26	125.61	16 01.4
2396764.5	5.40	14.41	178.00	- 3.54	+13.56	+ 5.28	12.69	329.16	116.70	16 37.9
2396765.5	5.45	14.29	177.80	- 3.64	+14.19	+ 5.47	13.16	329.06	107.78	17 14.6
2396766.5	5.49	14.18	177.61	- 3.73	+14.82	+ 5.67	13.64	328.97	98.85	17 51.2
2396767.5	5.54	14.06	177.43	- 3.82	+15.43	+ 5.86	14.12	328.89	89.90	18 27.9
2396768.5	5.59	13.94	177.27	- 3.90	+16.04	+ 6.06	14.60	328.81	80.95	19 04.7
2396769.5	5.63	13.82	177.11	- 3.97	+16.63	+ 6.25	15.07	328.73	71.98	19 41.5
2396770.5	5.69	13.69	176.97	- 4.03	+17.21	+ 6.44	15.55	328.67	63.00	20 18.4
2396771.5	5.74	13.57	176.84	- 4.09	+17.77	+ 6.64	16.02	328.61	54.01	20 55.3
2396772.5	5.79	13.45	176.73	- 4.14	+18.33	+ 6.83	16.50	328.55	45.01	21 32.3
2396773.5	5.84	13.32	176.62	- 4.19	+18.87	+ 7.02	16.97	328.51	35.99	22 09.4
2396774.5	5.90	13.20	176.53	- 4.22	+19.40	+ 7.21	17.44	328.46	26.97	22 46.4
2396775.5	5.96	13.07	176.44	- 4.26	+19.92	+ 7.40	17.91	328.43	17.93	23 23.6

Julian Day	Light- time	Diameter	A_E+180°	D_E	A_S-A_E	D_S	L_S	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2397480.5	6.23	12.50	227.99	+17.18	-23.79	+10.71	26.34	0.52	25.15	22 53.7
2397481.5	6.18	12.60	227.88	+17.10	-23.24	+10.88	26.80	0.45	16.16	23 30.5
2397482.5	6.14	12.69	227.76	+17.02	-22.68	+11.06	27.26	0.37	7.19	.. ..
2397483.5	6.09	12.78	227.62	+16.94	-22.11	+11.23	27.72	0.28	358.23	0 07.3
2397484.5	6.05	12.86	227.47	+16.85	-21.53	+11.41	28.18	0.18	349.28	0 44.0
2397485.5	6.01	12.95	227.31	+16.76	-20.93	+11.58	28.64	0.07	340.34	1 20.6
2397486.5	5.97	13.04	227.13	+16.67	-20.32	+11.75	29.10	359.96	331.42	1 57.2
2397487.5	5.93	13.12	226.94	+16.57	-19.69	+11.92	29.56	359.84	322.52	2 33.7
2397488.5	5.90	13.20	226.73	+16.47	-19.05	+12.09	30.01	359.70	313.62	3 10.2
2397489.5	5.86	13.28	226.52	+16.36	-18.40	+12.26	30.47	359.56	304.74	3 46.6
2397490.5	5.83	13.36	226.29	+16.26	-17.74	+12.43	30.93	359.41	295.87	4 23.0
2397491.5	5.80	13.43	226.05	+16.14	-17.06	+12.60	31.39	359.26	287.01	4 59.3
2397492.5	5.76	13.50	225.79	+16.03	-16.37	+12.76	31.84	359.09	278.16	5 35.6
2397493.5	5.74	13.57	225.53	+15.91	-15.67	+12.93	32.30	358.92	269.33	6 11.8
2397494.5	5.71	13.64	225.25	+15.79	-14.96	+13.09	32.75	358.74	260.50	6 48.0
2397495.5	5.68	13.70	224.96	+15.67	-14.24	+13.26	33.21	358.55	251.69	7 24.1
2397496.5	5.66	13.76	224.67	+15.54	-13.50	+13.42	33.66	358.35	242.88	8 00.2
2397497.5	5.63	13.82	224.36	+15.42	-12.76	+13.58	34.12	358.15	234.09	8 36.2
2397498.5	5.61	13.87	224.04	+15.29	-12.00	+13.75	34.57	357.94	225.30	9 12.3
2397499.5	5.59	13.92	223.71	+15.15	-11.24	+13.91	35.02	357.72	216.53	9 48.2
2397500.5	5.57	13.97	223.38	+15.02	-10.47	+14.07	35.48	357.50	207.76	10 24.2
2397501.5	5.56	14.01	223.03	+14.88	- 9.69	+14.22	35.93	357.28	199.00	11 00.1
2397502.5	5.54	14.05	222.68	+14.74	- 8.90	+14.38	36.38	357.04	190.24	11 35.9
2397503.5	5.53	14.08	222.33	+14.60	- 8.10	+14.54	36.83	356.81	181.50	12 11.8
2397504.5	5.52	14.11	221.96	+14.46	- 7.30	+14.70	37.28	356.57	172.76	12 47.6
2397505.5	5.51	14.13	221.59	+14.32	- 6.50	+14.85	37.73	356.32	164.02	13 23.4
2397506.5	5.50	14.15	221.22	+14.18	- 5.68	+15.00	38.18	356.07	155.29	13 59.2
2397507.5	5.50	14.17	220.84	+14.04	- 4.87	+15.16	38.63	355.82	146.56	14 35.0
2397508.5	5.49	14.18	220.46	+13.90	- 4.05	+15.31	39.08	355.57	137.83	15 10.7
2397509.5	5.49	14.18	220.08	+13.75	- 3.23	+15.46	39.53	355.31	129.11	15 46.5
2397510.5	5.49	14.18	219.69	+13.61	- 2.40	+15.61	39.98	355.05	120.38	16 22.3
2397511.5	5.49	14.17	219.31	+13.47	- 1.58	+15.76	40.43	354.80	111.66	16 58.0
2397512.5	5.50	14.16	218.92	+13.33	- 0.75	+15.91	40.88	354.54	102.94	17 33.8
2397513.5	5.50	14.15	218.54	+13.19	+ 0.07	+16.05	41.33	354.28	94.21	18 09.6
2397514.5	5.51	14.13	218.15	+13.05	+ 0.90	+16.20	41.78	354.02	85.49	18 45.3
2397515.5	5.52	14.11	217.77	+12.92	+ 1.72	+16.34	42.22	353.77	76.76	19 21.1
2397516.5	5.53	14.08	217.40	+12.78	+ 2.54	+16.49	42.67	353.51	68.02	19 57.0
2397517.5	5.54	14.04	217.02	+12.65	+ 3.35	+16.63	43.12	353.26	59.29	20 32.8
2397518.5	5.56	14.00	216.65	+12.52	+ 4.16	+16.77	43.56	353.02	50.54	21 08.6
2397519.5	5.58	13.96	216.29	+12.40	+ 4.97	+16.91	44.01	352.77	41.80	21 44.5
2397520.5	5.59	13.91	215.93	+12.27	+ 5.77	+17.05	44.45	352.53	33.04	22 20.4
2397521.5	5.62	13.86	215.57	+12.15	+ 6.57	+17.19	44.90	352.29	24.28	22 56.4
2397522.5	5.64	13.81	215.23	+12.04	+ 7.36	+17.33	45.34	352.06	15.52	23 32.4
2397523.5	5.66	13.75	214.89	+11.92	+ 8.14	+17.47	45.79	351.83	6.74	.. ..
2397524.5	5.69	13.69	214.56	+11.82	+ 8.91	+17.60	46.23	351.61	357.96	0 08.4
2397525.5	5.72	13.62	214.24	+11.71	+ 9.68	+17.74	46.68	351.40	349.16	0 44.4
2397526.5	5.74	13.55	213.92	+11.61	+10.44	+17.87	47.12	351.19	340.36	1 20.5
2397527.5	5.78	13.48	213.62	+11.52	+11.19	+18.00	47.56	350.98	331.55	1 56.6
2397528.5	5.81	13.40	213.32	+11.42	+11.93	+18.13	48.01	350.79	322.73	2 32.8
2397529.5	5.84	13.32	213.04	+11.34	+12.66	+18.26	48.45	350.59	313.90	3 09.0
2397530.5	5.88	13.24	212.76	+11.26	+13.38	+18.39	48.89	350.41	305.06	3 45.3
2397531.5	5.92	13.16	212.50	+11.18	+14.09	+18.52	49.34	350.24	296.20	4 21.6
2397532.5	5.95	13.07	212.25	+11.11	+14.79	+18.65	49.78	350.07	287.34	4 58.0
2397533.5	5.99	12.99	212.00	+11.04	+15.48	+18.77	50.22	349.91	278.46	5 34.4
2397534.5	6.04	12.90	211.77	+10.98	+16.16	+18.90	50.66	349.75	269.58	6 10.9
2397535.5	6.08	12.80	211.56	+10.92	+16.83	+19.02	51.10	349.61	260.68	6 47.4
2397536.5	6.12	12.71	211.35	+10.87	+17.48	+19.14	51.54	349.47	251.76	7 23.9
2397537.5	6.17	12.62	211.15	+10.82	+18.12	+19.26	51.99	349.34	242.84	8 00.6
2397538.5	6.22	12.52	210.97	+10.78	+18.76	+19.38	52.43	349.22	233.90	8 37.2
2397539.5	6.27	12.42	210.80	+10.75	+19.38	+19.50	52.87	349.11	224.95	9 14.0
2397540.5	6.32	12.33	210.64	+10.72	+19.99	+19.62	53.31	349.01	215.99	9 50.8

Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2398245.5	6.53	11.91	263.12	+22.33	-24.29	+21.53	61.22	21.11	222.30	9	24.9
2398246.5	6.48	12.01	262.99	+22.29	-23.70	+21.63	61.66	21.04	213.33	10	01.6
2398247.5	6.43	12.10	262.84	+22.26	-23.09	+21.72	62.10	20.97	204.38	10	38.3
2398248.5	6.38	12.20	262.68	+22.23	-22.47	+21.81	62.53	20.89	195.45	11	14.9
2398249.5	6.33	12.29	262.50	+22.19	-21.83	+21.90	62.97	20.80	186.53	11	51.5
2398250.5	6.29	12.38	262.31	+22.16	-21.18	+21.99	63.41	20.70	177.62	12	28.0
2398251.5	6.24	12.47	262.11	+22.13	-20.51	+22.08	63.85	20.60	168.73	13	04.4
2398252.5	6.20	12.56	261.89	+22.09	-19.83	+22.17	64.28	20.49	159.85	13	40.8
2398253.5	6.15	12.65	261.66	+22.06	-19.14	+22.25	64.72	20.37	150.98	14	17.2
2398254.5	6.11	12.73	261.42	+22.03	-18.43	+22.33	65.16	20.24	142.12	14	53.4
2398255.5	6.07	12.82	261.16	+21.99	-17.71	+22.42	65.59	20.11	133.28	15	29.7
2398256.5	6.03	12.90	260.89	+21.96	-16.98	+22.50	66.03	19.97	124.45	16	05.8
2398257.5	6.00	12.98	260.61	+21.93	-16.23	+22.58	66.47	19.83	115.64	16	42.0
2398258.5	5.96	13.06	260.31	+21.89	-15.47	+22.66	66.90	19.67	106.83	17	18.0
2398259.5	5.93	13.13	260.01	+21.86	-14.70	+22.73	67.34	19.51	98.04	17	54.0
2398260.5	5.90	13.20	259.69	+21.82	-13.91	+22.81	67.78	19.35	89.26	18	30.0
2398261.5	5.87	13.27	259.36	+21.79	-13.12	+22.88	68.21	19.17	80.49	19	05.9
2398262.5	5.84	13.34	259.02	+21.76	-12.31	+22.96	68.65	18.99	71.72	19	41.8
2398263.5	5.81	13.40	258.67	+21.72	-11.49	+22.93	69.09	18.81	62.97	20	17.7
2398264.5	5.78	13.46	258.31	+21.69	-10.67	+23.10	69.52	18.62	54.23	20	53.5
2398265.5	5.76	13.51	257.95	+21.65	- 9.83	+23.17	69.96	18.42	45.50	21	29.3
2398266.5	5.74	13.57	257.57	+21.62	- 8.98	+23.23	70.40	18.22	36.77	22	05.0
2398267.5	5.72	13.62	257.18	+21.58	- 8.13	+23.30	70.83	18.01	28.05	22	40.7
2398268.5	5.70	13.66	256.79	+21.55	- 7.27	+23.37	71.27	17.80	19.34	23	16.4
2398269.5	5.68	13.70	256.39	+21.51	- 6.40	+23.43	71.71	17.59	10.63	23	52.1
2398270.5	5.67	13.74	255.99	+21.48	- 5.52	+23.49	72.14	17.37	1.93	..	..
2398271.5	5.65	13.77	255.58	+21.45	- 4.64	+23.55	72.58	17.14	353.24	0	27.7
2398272.5	5.64	13.79	255.17	+21.41	- 3.76	+23.61	73.02	16.91	344.55	1	03.3
2398273.5	5.63	13.82	254.75	+21.38	- 2.86	+23.67	73.45	16.68	335.86	1	38.9
2398274.5	5.63	13.84	254.33	+21.34	- 1.97	+23.72	73.89	16.45	327.17	2	14.5
2398275.5	5.62	13.85	253.91	+21.31	- 1.08	+23.78	74.33	16.22	318.49	2	50.1
2398276.5	5.62	13.86	253.48	+21.28	- 0.18	+23.83	74.76	15.98	309.81	3	25.7
2398277.5	5.62	13.86	253.06	+21.24	+ 0.72	+23.88	75.20	15.74	301.12	4	01.3
2398278.5	5.62	13.86	252.63	+21.21	+ 1.62	+23.93	75.64	15.51	292.44	4	36.9
2398279.5	5.62	13.86	252.21	+21.18	+ 2.52	+23.98	76.07	15.27	283.75	5	12.5
2398280.5	5.62	13.85	251.79	+21.15	+ 3.41	+24.03	76.51	15.03	275.06	5	48.2
2398281.5	5.63	13.83	251.38	+21.12	+ 4.30	+24.08	76.95	14.79	266.37	6	23.8
2398282.5	5.64	13.81	250.96	+21.09	+ 5.19	+24.12	77.39	14.56	257.67	6	59.4
2398283.5	5.64	13.79	250.55	+21.06	+ 6.08	+24.16	77.82	14.33	248.97	7	35.1
2398284.5	5.66	13.76	250.15	+21.03	+ 6.96	+24.21	78.26	14.09	240.26	8	10.8
2398285.5	5.67	13.73	249.75	+21.01	+ 7.84	+24.25	78.70	13.87	231.55	8	46.6
2398286.5	5.68	13.70	249.36	+20.98	+ 8.70	+24.28	79.14	13.64	222.83	9	22.3
2398287.5	5.70	13.66	248.98	+20.96	+ 9.57	+24.32	79.57	13.42	214.10	9	58.1
2398288.5	5.72	13.61	248.60	+20.93	+10.42	+24.36	80.01	13.20	205.36	10	33.9
2398289.5	5.74	13.56	248.24	+20.91	+11.27	+24.39	80.45	12.99	196.62	11	09.8
2398290.5	5.76	13.51	247.88	+20.89	+12.11	+24.42	80.89	12.78	187.86	11	45.7
2398291.5	5.78	13.46	247.53	+20.88	+12.93	+24.46	81.33	12.57	179.10	12	21.7
2398292.5	5.81	13.40	247.19	+20.86	+13.75	+24.49	81.76	12.37	170.32	12	57.7
2398293.5	5.84	13.34	246.86	+20.84	+14.56	+24.51	82.20	12.18	161.54	13	33.7
2398294.5	5.86	13.27	246.54	+20.83	+15.36	+24.54	82.64	11.99	152.74	14	09.8
2398295.5	5.89	13.21	246.24	+20.82	+16.15	+24.56	83.08	11.81	143.93	14	46.0
2398296.5	5.93	13.14	245.94	+20.81	+16.93	+24.59	83.52	11.64	135.11	15	22.2
2398297.5	5.96	13.07	245.66	+20.81	+17.69	+24.61	83.96	11.47	126.27	15	58.5
2398298.5	5.99	12.99	245.39	+20.80	+18.44	+24.63	84.40	11.31	117.43	16	34.8
2398299.5	6.03	12.92	245.13	+20.80	+19.18	+24.65	84.84	11.15	108.57	17	11.1
2398300.5	6.06	12.84	244.89	+20.80	+19.91	+24.67	85.28	11.00	99.70	17	47.6
2398301.5	6.10	12.76	244.65	+20.80	+20.63	+24.68	85.72	10.87	90.81	18	24.0
2398302.5	6.14	12.67	244.44	+20.81	+21.33	+24.70	86.16	10.73	81.92	19	00.6
2398303.5	6.18	12.59	244.23	+20.82	+22.02	+24.71	86.60	10.61	73.00	19	37.2
2398304.5	6.23	12.51	244.04	+20.83	+22.70	+24.72	87.04	10.49	64.08	20	13.8
2398305.5	6.27	12.42	243.86	+20.84	+23.36	+24.73	87.48	10.38	55.14	20	50.5

Julian Day	Light-time m	Diameter "	A_s+180° °	D_s °	A_s-A_s °	D_s °	L_s °	Position	Central Meridian °	Time of Transit of Zero Meridian	
								Angle of Axis °		h	m
2399010.5	6.33	12.31	299.87	+19.53	-23.85	+24.64	95.46	35.56	57.95	20	39.2
2399011.5	6.27	12.42	299.77	+19.55	-23.27	+24.62	95.91	35.54	48.95	21	16.0
2399012.5	6.21	12.53	299.66	+19.57	-22.67	+24.60	96.35	35.51	39.97	21	52.9
2399013.5	6.16	12.64	299.54	+19.59	-22.06	+24.57	96.80	35.48	30.99	22	29.6
2399014.5	6.11	12.75	299.40	+19.62	-21.43	+24.55	97.25	35.44	22.03	23	06.3
2399015.5	6.05	12.86	299.25	+19.65	-20.79	+24.52	97.69	35.40	13.09	23	43.0
2399016.5	6.00	12.97	299.09	+19.68	-20.14	+24.49	98.14	35.36	4.16	..	..
2399017.5	5.95	13.07	298.91	+19.72	-19.47	+24.46	98.59	35.32	355.24	0	19.5
2399018.5	5.91	13.18	298.72	+19.76	-18.79	+24.43	99.04	35.27	346.33	0	56.1
2399019.5	5.86	13.28	298.52	+19.80	-18.10	+24.40	99.48	35.22	337.43	1	32.5
2399020.5	5.81	13.39	298.31	+19.85	-17.39	+24.36	99.93	35.16	328.55	2	09.0
2399021.5	5.77	13.49	298.08	+19.90	-16.68	+24.33	100.38	35.10	319.68	2	45.3
2399022.5	5.73	13.59	297.84	+19.96	-15.94	+24.29	100.83	35.04	310.82	3	21.7
2399023.5	5.69	13.69	297.59	+20.02	-15.20	+24.25	101.28	34.97	301.98	3	57.9
2399024.5	5.65	13.78	297.33	+20.08	-14.45	+24.21	101.73	34.90	293.14	4	34.1
2399025.5	5.61	13.88	297.05	+20.14	-13.68	+24.16	102.18	34.82	284.32	5	10.3
2399026.5	5.57	13.97	296.76	+20.21	-12.90	+24.12	102.63	34.75	275.51	5	46.4
2399027.5	5.54	14.06	296.47	+20.28	-12.11	+24.07	103.08	34.66	266.70	6	22.5
2399028.5	5.51	14.14	296.16	+20.35	-11.31	+24.03	103.53	34.58	257.91	6	58.6
2399029.5	5.47	14.22	295.84	+20.43	-10.50	+23.98	103.98	34.49	249.13	7	34.6
2399030.5	5.44	14.30	295.51	+20.51	-9.68	+23.93	104.44	34.39	240.36	8	10.5
2399031.5	5.41	14.38	295.17	+20.59	-8.86	+23.87	104.89	34.29	231.59	8	46.4
2399032.5	5.39	14.45	294.83	+20.67	-8.02	+23.82	105.34	34.19	222.84	9	22.3
2399033.5	5.36	14.52	294.47	+20.75	-7.17	+23.76	105.80	34.09	214.09	9	58.2
2399034.5	5.34	14.58	294.11	+20.84	-6.32	+23.71	106.25	33.98	205.35	10	34.0
2399035.5	5.32	14.64	293.74	+20.93	-5.46	+23.65	106.70	33.87	196.62	11	09.8
2399036.5	5.30	14.70	293.37	+21.02	-4.59	+23.59	107.16	33.75	187.89	11	45.5
2399037.5	5.28	14.75	292.98	+21.11	-3.71	+23.53	107.61	33.64	179.17	12	21.3
2399038.5	5.26	14.79	292.60	+21.20	-2.83	+23.46	108.07	33.52	170.45	12	57.0
2399039.5	5.25	14.83	292.20	+21.30	-1.95	+23.40	108.52	33.39	161.74	13	32.7
2399040.5	5.23	14.87	291.81	+21.39	-1.06	+23.33	108.98	33.27	153.03	14	08.4
2399041.5	5.22	14.90	291.41	+21.48	-0.17	+23.26	109.44	33.14	144.33	14	44.1
2399042.5	5.21	14.93	291.01	+21.58	+0.72	+23.19	109.90	33.01	135.62	15	19.7
2399043.5	5.21	14.95	290.60	+21.68	+1.62	+23.12	110.35	32.87	126.92	15	55.4
2399044.5	5.20	14.97	290.20	+21.77	+2.51	+23.05	110.81	32.74	118.22	16	31.1
2399045.5	5.20	14.98	289.80	+21.87	+3.41	+22.97	111.27	32.60	109.51	17	06.8
2399046.5	5.19	14.99	289.39	+21.96	+4.30	+22.89	111.73	32.47	100.81	17	42.5
2399047.5	5.19	14.99	288.99	+22.06	+5.20	+22.82	112.19	32.33	92.10	18	18.2
2399048.5	5.19	14.99	288.59	+22.15	+6.09	+22.74	112.65	32.19	83.39	18	53.9
2399049.5	5.20	14.98	288.20	+22.25	+6.97	+22.65	113.11	32.05	74.68	19	29.6
2399050.5	5.20	14.97	287.81	+22.34	+7.85	+22.57	113.57	31.91	65.96	20	05.4
2399051.5	5.21	14.95	287.42	+22.43	+8.73	+22.49	114.03	31.78	57.24	20	41.2
2399052.5	5.21	14.93	287.04	+22.52	+9.60	+22.40	114.50	31.64	48.51	21	17.0
2399053.5	5.22	14.90	286.67	+22.61	+10.47	+22.31	114.96	31.50	39.77	21	52.8
2399054.5	5.24	14.87	286.30	+22.70	+11.32	+22.22	115.42	31.37	31.02	22	28.7
2399055.5	5.25	14.83	285.94	+22.79	+12.17	+22.13	115.89	31.24	22.27	23	04.6
2399056.5	5.26	14.79	285.59	+22.88	+13.02	+22.04	116.35	31.11	13.51	23	40.6
2399057.5	5.28	14.75	285.25	+22.96	+13.85	+21.95	116.81	30.98	4.74	..	..
2399058.5	5.30	14.70	284.92	+23.05	+14.67	+21.85	117.28	30.85	355.96	0	16.6
2399059.5	5.31	14.65	284.60	+23.13	+15.48	+21.75	117.75	30.73	347.17	0	52.6
2399060.5	5.33	14.59	284.29	+23.21	+16.29	+21.66	118.21	30.61	338.37	1	28.7
2399061.5	5.36	14.53	283.99	+23.29	+17.08	+21.56	118.68	30.50	329.56	2	04.8
2399062.5	5.38	14.47	283.70	+23.37	+17.86	+21.45	119.15	30.38	320.73	2	41.0
2399063.5	5.40	14.41	283.42	+23.44	+18.63	+21.35	119.62	30.28	311.89	3	17.3
2399064.5	5.43	14.34	283.15	+23.52	+19.38	+21.25	120.09	30.17	303.05	3	53.6
2399065.5	5.46	14.27	282.90	+23.59	+20.13	+21.14	120.55	30.07	294.18	4	29.9
2399066.5	5.48	14.19	282.66	+23.66	+20.86	+21.03	121.02	29.98	285.31	5	06.3
2399067.5	5.51	14.12	282.43	+23.73	+21.57	+20.92	121.50	29.89	276.42	5	42.8
2399068.5	5.54	14.04	282.22	+23.79	+22.28	+20.81	121.97	29.80	267.52	6	19.3
2399069.5	5.58	13.96	282.02	+23.86	+22.97	+20.70	122.44	29.72	258.60	6	55.9
2399070.5	5.61	13.88	281.83	+23.92	+23.64	+20.58	122.91	29.65	249.67	7	32.6

Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2399785.5	5.35	14.56	340.02	+ 7.74	-20.86	+16.78	136.42	36.44	159.30	13	43.5
2399786.5	5.29	14.70	339.97	+ 7.80	-20.32	+16.62	136.91	36.46	150.26	14	20.6
2399787.5	5.24	14.85	339.91	+ 7.86	-19.77	+16.47	137.40	36.49	141.22	14	57.6
2399788.5	5.19	14.99	339.84	+ 7.93	-19.21	+16.31	137.90	36.51	132.20	15	34.6
2399789.5	5.14	15.13	339.75	+ 8.01	-18.64	+16.15	138.39	36.54	123.19	16	11.5
2399790.5	5.10	15.28	339.65	+ 8.10	-18.05	+15.98	138.89	36.58	114.19	16	48.4
2399791.5	5.05	15.42	339.55	+ 8.19	-17.46	+15.82	139.38	36.61	105.20	17	25.3
2399792.5	5.00	15.56	339.43	+ 8.28	-16.85	+15.66	139.88	36.65	96.23	18	02.1
2399793.5	4.96	15.70	339.30	+ 8.38	-16.23	+15.49	140.38	36.69	87.26	18	38.8
2399794.5	4.92	15.84	339.15	+ 8.49	-15.60	+15.32	140.88	36.73	78.30	19	15.5
2399795.5	4.87	15.97	339.00	+ 8.61	-14.97	+15.15	141.38	36.78	69.36	19	52.2
2399796.5	4.83	16.11	338.84	+ 8.73	-14.32	+14.98	141.88	36.83	60.42	20	28.8
2399797.5	4.79	16.24	338.67	+ 8.85	-13.65	+14.81	142.38	36.88	51.50	21	05.3
2399798.5	4.76	16.37	338.48	+ 8.98	-12.98	+14.64	142.88	36.93	42.58	21	41.9
2399799.5	4.72	16.50	338.29	+ 9.12	-12.30	+14.47	143.38	36.99	33.68	22	18.4
2399800.5	4.68	16.62	338.08	+ 9.26	-11.61	+14.29	143.88	37.04	24.78	22	54.8
2399801.5	4.65	16.74	337.87	+ 9.40	-10.91	+14.11	144.39	37.10	15.90	23	31.2
2399802.5	4.62	16.86	337.65	+ 9.55	-10.20	+13.94	144.89	37.16	7.02	..	..
2399803.5	4.59	16.98	337.41	+ 9.71	- 9.48	+13.76	145.40	37.22	358.15	0	07.6
2399804.5	4.56	17.09	337.17	+ 9.87	- 8.75	+13.58	145.91	37.29	349.29	0	43.9
2399805.5	4.53	17.20	336.92	+10.03	- 8.01	+13.40	146.41	37.35	340.44	1	20.2
2399806.5	4.50	17.30	336.66	+10.20	- 7.26	+13.21	146.92	37.42	331.60	1	56.5
2399807.5	4.47	17.40	336.39	+10.37	- 6.51	+13.03	147.43	37.48	322.77	2	32.7
2399808.5	4.45	17.49	336.12	+10.55	- 5.75	+12.84	147.94	37.55	313.94	3	08.9
2399809.5	4.43	17.58	335.84	+10.73	- 4.98	+12.66	148.45	37.61	305.11	3	45.1
2399810.5	4.41	17.66	335.55	+10.91	- 4.21	+12.47	148.96	37.68	296.30	4	21.2
2399811.5	4.39	17.74	335.26	+11.09	- 3.43	+12.28	149.48	37.75	287.49	4	57.3
2399812.5	4.37	17.81	334.96	+11.27	- 2.64	+12.09	149.99	37.81	278.68	5	33.4
2399813.5	4.35	17.88	334.66	+11.46	- 1.85	+11.90	150.50	37.88	269.88	6	09.5
2399814.5	4.34	17.94	334.36	+11.65	- 1.06	+11.71	151.02	37.94	261.08	6	45.6
2399815.5	4.33	18.00	334.05	+11.84	- 0.26	+11.51	151.53	38.00	252.28	7	21.7
2399816.5	4.31	18.05	333.74	+12.03	+ 0.54	+11.32	152.05	38.07	243.49	7	57.7
2399817.5	4.30	18.09	333.43	+12.22	+ 1.34	+11.12	152.57	38.13	234.69	8	33.8
2399818.5	4.29	18.13	333.11	+12.41	+ 2.14	+10.93	153.09	38.19	225.90	9	09.8
2399819.5	4.29	18.16	332.80	+12.60	+ 2.94	+10.73	153.61	38.25	217.11	9	45.9
2399820.5	4.28	18.18	332.49	+12.78	+ 3.74	+10.53	154.13	38.30	208.31	10	21.9
2399821.5	4.28	18.20	332.18	+12.97	+ 4.54	+10.33	154.65	38.36	199.52	10	58.0
2399822.5	4.27	18.21	331.87	+13.16	+ 5.34	+10.13	155.17	38.41	190.72	11	34.1
2399823.5	4.27	18.22	331.56	+13.34	+ 6.14	+ 9.93	155.69	38.46	181.92	12	10.2
2399824.5	4.27	18.22	331.26	+13.52	+ 6.93	+ 9.72	156.22	38.51	173.11	12	46.3
2399825.5	4.28	18.21	330.96	+13.70	+ 7.72	+ 9.52	156.74	38.56	164.31	13	22.4
2399826.5	4.28	18.20	330.66	+13.87	+ 8.51	+ 9.31	157.27	38.61	155.49	13	58.6
2399827.5	4.28	18.18	330.37	+14.04	+ 9.29	+ 9.11	157.79	38.65	146.67	14	34.8
2399828.5	4.29	18.15	330.09	+14.21	+10.06	+ 8.90	158.32	38.69	137.85	15	11.0
2399829.5	4.30	18.12	329.81	+14.38	+10.83	+ 8.69	158.85	38.73	129.02	15	47.2
2399830.5	4.30	18.09	329.54	+14.54	+11.59	+ 8.48	159.38	38.77	120.18	16	23.5
2399831.5	4.31	18.05	329.28	+14.69	+12.35	+ 8.27	159.91	38.80	111.33	16	59.8
2399832.5	4.33	18.00	329.02	+14.84	+13.10	+ 8.06	160.44	38.84	102.48	17	36.1
2399833.5	4.34	17.95	328.77	+14.99	+13.84	+ 7.85	160.97	38.87	93.61	18	12.5
2399834.5	4.35	17.89	328.53	+15.13	+14.57	+ 7.63	161.50	38.90	84.74	18	48.9
2399835.5	4.37	17.83	328.31	+15.27	+15.29	+ 7.42	162.04	38.93	75.86	19	25.4
2399836.5	4.38	17.76	328.09	+15.40	+16.00	+ 7.20	162.57	38.95	66.96	20	01.9
2399837.5	4.40	17.69	327.88	+15.53	+16.71	+ 6.99	163.11	38.98	58.06	20	38.4
2399838.5	4.42	17.62	327.68	+15.65	+17.40	+ 6.77	163.65	39.00	49.14	21	15.0
2399839.5	4.44	17.54	327.49	+15.76	+18.08	+ 6.55	164.18	39.02	40.22	21	51.7
2399840.5	4.46	17.46	327.32	+15.87	+18.75	+ 6.34	164.72	39.04	31.28	22	28.4
2399841.5	4.48	17.38	327.15	+15.98	+19.41	+ 6.12	165.26	39.06	22.33	23	05.2
2399842.5	4.50	17.29	327.00	+16.08	+20.06	+ 5.90	165.80	39.08	13.37	23	42.0
2399843.5	4.53	17.20	326.86	+16.17	+20.69	+ 5.67	166.34	39.09	4.39	..	..
2399844.5	4.55	17.10	326.74	+16.25	+21.32	+ 5.45	166.89	39.11	355.41	0	18.8
2399845.5	4.58	17.01	326.62	+16.33	+21.93	+ 5.23	167.43	39.12	346.40	0	55.8

Julian Day	Light- time	Diameter	$A_{\oplus}+180^{\circ}$	$D_{\oplus}$	$A_{\oplus}-A_{\oplus}$	$D_{\oplus}$	$L_{\oplus}$	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2400580.5	3.91	19.93	35.22	-12.19	-21.91	-6.06	194.60	7.90	63.57	20 16.5
2400581.5	3.87	20.12	35.21	-12.11	-21.36	-6.30	195.19	7.90	54.48	20 53.7
2400582.5	3.83	20.31	35.19	-12.02	-20.80	-6.54	195.78	7.92	45.39	21 31.0
2400583.5	3.80	20.49	35.17	-11.93	-20.23	-6.78	196.37	7.94	36.32	22 08.1
2400584.5	3.76	20.68	35.12	-11.83	-19.65	-7.02	196.96	7.98	27.26	22 45.3
2400585.5	3.73	20.86	35.07	-11.73	-19.05	-7.26	197.55	8.02	18.22	23 22.3
2400586.5	3.70	21.04	35.01	-11.63	-18.43	-7.49	198.15	8.07	9.18	23 59.4
2400587.5	3.67	21.22	34.93	-11.52	-17.81	-7.73	198.74	8.12	0.15	.. ..
2400588.5	3.64	21.40	34.84	-11.41	-17.17	-7.97	199.34	8.19	351.14	0 36.3
2400589.5	3.61	21.57	34.75	-11.30	-16.52	-8.21	199.93	8.26	342.14	1 13.3
2400590.5	3.58	21.74	34.64	-11.18	-15.86	-8.44	200.53	8.34	333.15	1 50.2
2400591.5	3.55	21.90	34.52	-11.06	-15.18	-8.68	201.13	8.42	324.17	2 27.0
2400592.5	3.53	22.06	34.39	-10.93	-14.49	-8.92	201.72	8.52	315.19	3 03.8
2400593.5	3.50	22.22	34.24	-10.81	-13.80	-9.15	202.32	8.62	306.23	3 40.5
2400594.5	3.48	22.37	34.09	-10.68	-13.08	-9.39	202.92	8.73	297.28	4 17.3
2400595.5	3.46	22.52	33.93	-10.55	-12.36	-9.62	203.53	8.84	288.34	4 53.9
2400596.5	3.44	22.66	33.76	-10.41	-11.63	-9.86	204.13	8.96	279.41	5 30.6
2400597.5	3.42	22.79	33.58	-10.28	-10.89	-10.09	204.73	9.09	270.49	6 07.2
2400598.5	3.40	22.92	33.39	-10.14	-10.13	-10.32	205.33	9.22	261.57	6 43.7
2400599.5	3.38	23.04	33.20	-10.00	-9.37	-10.55	205.94	9.36	252.66	7 20.2
2400600.5	3.36	23.16	32.99	-9.86	-8.60	-10.79	206.54	9.51	243.76	7 56.7
2400601.5	3.35	23.27	32.78	-9.72	-7.81	-11.02	207.15	9.65	234.87	8 33.2
2400602.5	3.33	23.37	32.56	-9.58	-7.02	-11.25	207.75	9.81	225.98	9 09.6
2400603.5	3.32	23.46	32.34	-9.43	-6.23	-11.47	208.36	9.97	217.10	9 46.0
2400604.5	3.31	23.55	32.11	-9.29	-5.42	-11.70	208.97	10.13	208.23	10 22.4
2400605.5	3.29	23.63	31.88	-9.15	-4.61	-11.93	209.58	10.29	199.36	10 58.8
2400606.5	3.29	23.70	31.64	-9.01	-3.79	-12.16	210.19	10.46	190.49	11 35.1
2400607.5	3.28	23.76	31.39	-8.87	-2.97	-12.38	210.80	10.63	181.63	12 11.5
2400608.5	3.27	23.81	31.15	-8.73	-2.14	-12.61	211.41	10.81	172.77	12 47.8
2400609.5	3.26	23.86	30.90	-8.59	-1.31	-12.83	212.02	10.98	163.91	13 24.1
2400610.5	3.26	23.89	30.65	-8.46	-0.47	-13.05	212.63	11.15	155.05	14 00.5
2400611.5	3.25	23.92	30.40	-8.32	+0.36	-13.27	213.25	11.33	146.20	14 36.8
2400612.5	3.25	23.94	30.15	-8.19	+1.20	-13.49	213.86	11.50	137.34	15 13.1
2400613.5	3.25	23.94	29.90	-8.07	+2.04	-13.71	214.47	11.68	128.48	15 49.4
2400614.5	3.25	23.94	29.65	-7.94	+2.88	-13.93	215.09	11.85	119.62	16 25.8
2400615.5	3.25	23.94	29.41	-7.82	+3.72	-14.15	215.70	12.02	110.76	17 02.1
2400616.5	3.25	23.92	29.16	-7.71	+4.56	-14.36	216.32	12.19	101.89	17 38.5
2400617.5	3.26	23.89	28.92	-7.60	+5.40	-14.58	216.94	12.36	93.02	18 14.9
2400618.5	3.26	23.86	28.69	-7.49	+6.23	-14.79	217.55	12.52	84.15	18 51.3
2400619.5	3.27	23.82	28.46	-7.39	+7.07	-15.00	218.17	12.68	75.27	19 27.7
2400620.5	3.28	23.76	28.23	-7.29	+7.89	-15.21	218.79	12.83	66.38	20 04.2
2400621.5	3.28	23.71	28.01	-7.20	+8.72	-15.42	219.41	12.99	57.49	20 40.7
2400622.5	3.29	23.64	27.80	-7.11	+9.54	-15.63	220.03	13.13	48.60	21 17.2
2400623.5	3.30	23.57	27.60	-7.03	+10.35	-15.83	220.65	13.27	39.69	21 53.8
2400624.5	3.31	23.49	27.40	-6.96	+11.16	-16.04	221.27	13.41	30.78	22 30.4
2400625.5	3.33	23.40	27.21	-6.89	+11.96	-16.24	221.89	13.54	21.86	23 07.0
2400626.5	3.34	23.30	27.03	-6.83	+12.75	-16.44	222.52	13.66	12.93	23 43.6
2400627.5	3.35	23.20	26.85	-6.77	+13.54	-16.64	223.14	13.77	3.99	.. ..
2400628.5	3.37	23.10	26.69	-6.72	+14.32	-16.84	223.76	13.88	355.04	0 20.3
2400629.5	3.39	22.98	26.54	-6.68	+15.10	-17.03	224.39	13.99	346.08	0 57.1
2400630.5	3.40	22.87	26.39	-6.64	+15.86	-17.23	225.01	14.08	337.11	1 33.9
2400631.5	3.42	22.74	26.26	-6.61	+16.62	-17.42	225.64	14.17	328.13	2 10.7
2400632.5	3.44	22.62	26.14	-6.59	+17.36	-17.61	226.26	14.25	319.14	2 47.6
2400633.5	3.46	22.48	26.02	-6.57	+18.10	-17.80	226.89	14.32	310.14	3 24.5
2400634.5	3.48	22.35	25.92	-6.56	+18.83	-17.99	227.51	14.39	301.13	4 01.5
2400635.5	3.51	22.20	25.83	-6.56	+19.55	-18.17	228.14	14.45	292.11	4 38.6
2400636.5	3.53	22.06	25.75	-6.56	+20.26	-18.36	228.77	14.49	283.07	5 15.6
2400637.5	3.55	21.91	25.69	-6.57	+20.96	-18.54	229.39	14.53	274.03	5 52.8
2400638.5	3.58	21.76	25.63	-6.59	+21.65	-18.72	230.02	14.57	264.97	6 30.0
2400639.5	3.60	21.60	25.59	-6.62	+22.33	-18.90	230.65	14.59	255.90	7 07.2
2400640.5	3.63	21.45	25.56	-6.65	+23.00	-19.07	231.28	14.60	246.81	7 44.5

PHYSICAL EPHEMERIS OF MARS, 1862

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Julian Day	Light- time m	Diameter "	$A_s + 180^\circ$ °	D_E °	$A_s - A_E$ °	D_s °	L_s °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m	
2401390.5	3.65	21.30	117.02	-18.43	-25.80	-24.75	271.11	325.26	164.31	13	22.9
2401391.5	3.63	21.44	116.95	-18.46	-25.04	-24.75	271.73	325.28	155.28	13	59.9
2401392.5	3.61	21.57	116.87	-18.48	-24.27	-24.74	272.36	325.30	146.26	14	36.9
2401393.5	3.59	21.70	116.77	-18.51	-23.48	-24.72	272.99	325.33	137.26	15	13.8
2401394.5	3.57	21.83	116.65	-18.55	-22.67	-24.71	273.61	325.36	128.27	15	50.6
2401395.5	3.55	21.95	116.52	-18.59	-21.86	-24.69	274.24	325.39	119.30	16	27.4
2401396.5	3.53	22.06	116.38	-18.64	-21.03	-24.66	274.87	325.43	110.33	17	04.1
2401397.5	3.51	22.18	116.23	-18.69	-20.19	-24.64	275.49	325.47	101.39	17	40.8
2401398.5	3.49	22.28	116.06	-18.74	-19.33	-24.61	276.11	325.52	92.45	18	17.4
2401399.5	3.48	22.38	115.88	-18.80	-18.47	-24.58	276.74	325.57	83.53	18	54.0
2401400.5	3.46	22.48	115.69	-18.86	-17.59	-24.54	277.36	325.62	74.62	19	30.5
2401401.5	3.45	22.57	115.48	-18.93	-16.70	-24.50	277.98	325.68	65.72	20	06.9
2401402.5	3.44	22.65	115.26	-19.00	-15.80	-24.46	278.61	325.74	56.83	20	43.3
2401403.5	3.43	22.73	115.03	-19.08	-14.89	-24.42	279.23	325.80	47.95	21	19.7
2401404.5	3.41	22.80	114.80	-19.16	-13.97	-24.37	279.85	325.87	39.09	21	56.0
2401405.5	3.41	22.86	114.55	-19.24	-13.04	-24.32	280.47	325.94	30.23	22	32.3
2401406.5	3.40	22.91	114.29	-19.33	-12.11	-24.27	281.09	326.02	21.38	23	08.6
2401407.5	3.39	22.96	114.02	-19.42	-11.16	-24.21	281.71	326.10	12.54	23	44.8
2401408.5	3.38	23.00	113.74	-19.51	-10.21	-24.15	282.33	326.18	3.71	..	..
2401409.5	3.38	23.03	113.46	-19.61	-9.25	-24.09	282.94	326.26	354.89	0	20.9
2401410.5	3.38	23.05	113.17	-19.71	-8.29	-24.02	283.56	326.35	346.07	0	57.1
2401411.5	3.38	23.06	112.87	-19.81	-7.32	-23.96	284.18	326.44	337.26	1	33.2
2401412.5	3.37	23.07	112.57	-19.92	-6.35	-23.89	284.79	326.53	328.46	2	09.3
2401413.5	3.38	23.06	112.26	-20.02	-5.38	-23.81	285.41	326.63	319.65	2	45.4
2401414.5	3.38	23.05	111.96	-20.13	-4.40	-23.74	286.02	326.72	310.85	3	21.5
2401415.5	3.38	23.03	111.64	-20.24	-3.43	-23.66	286.64	326.82	302.06	3	57.6
2401416.5	3.38	23.00	111.33	-20.35	-2.45	-23.57	287.25	326.92	293.26	4	33.6
2401417.5	3.39	22.96	111.02	-20.47	-1.48	-23.49	287.87	327.02	284.46	5	09.7
2401418.5	3.40	22.91	110.70	-20.58	-0.50	-23.40	288.48	327.12	275.67	5	45.8
2401419.5	3.41	22.85	110.39	-20.69	+0.47	-23.31	289.09	327.22	266.87	6	21.8
2401420.5	3.42	22.79	110.08	-20.81	+1.44	-23.22	289.70	327.33	258.07	6	57.9
2401421.5	3.43	22.72	109.77	-20.92	+2.40	-23.13	290.31	327.43	249.27	7	34.0
2401422.5	3.44	22.63	109.46	-21.04	+3.36	-23.03	290.92	327.53	240.47	8	10.1
2401423.5	3.45	22.55	109.16	-21.16	+4.32	-22.93	291.53	327.63	231.66	8	46.3
2401424.5	3.47	22.45	108.87	-21.27	+5.26	-22.83	292.13	327.74	222.84	9	22.4
2401425.5	3.48	22.34	108.57	-21.38	+6.20	-22.72	292.74	327.84	214.02	9	58.6
2401426.5	3.50	22.23	108.29	-21.50	+7.14	-22.61	293.35	327.93	205.20	10	34.8
2401427.5	3.52	22.11	108.01	-21.61	+8.06	-22.50	293.95	328.03	196.36	11	11.0
2401428.5	3.54	21.99	107.74	-21.72	+8.97	-22.39	294.56	328.13	187.52	11	47.3
2401429.5	3.56	21.85	107.47	-21.83	+9.88	-22.28	295.16	328.22	178.67	12	23.6
2401430.5	3.58	21.72	107.22	-21.94	+10.77	-22.16	295.76	328.31	169.81	13	00.0
2401431.5	3.61	21.57	106.98	-22.05	+11.65	-22.04	296.37	328.40	160.94	13	36.4
2401432.5	3.63	21.42	106.74	-22.16	+12.52	-21.92	296.97	328.48	152.06	14	12.8
2401433.5	3.66	21.27	106.52	-22.26	+13.38	-21.79	297.57	328.56	143.17	14	49.3
2401434.5	3.69	21.11	106.31	-22.37	+14.22	-21.67	298.17	328.64	134.27	15	25.9
2401435.5	3.72	20.94	106.11	-22.47	+15.05	-21.54	298.77	328.71	125.35	16	02.5
2401436.5	3.75	20.77	105.92	-22.57	+15.87	-21.41	299.37	328.78	116.43	16	39.1
2401437.5	3.78	20.60	105.74	-22.67	+16.67	-21.27	299.96	328.85	107.49	17	15.8
2401438.5	3.81	20.42	105.58	-22.76	+17.45	-21.14	300.56	328.91	98.53	17	52.6
2401439.5	3.85	20.24	105.43	-22.85	+18.22	-21.00	301.16	328.96	89.56	18	29.4
2401440.5	3.88	20.06	105.30	-22.95	+18.98	-20.86	301.75	329.01	80.58	19	06.3
2401441.5	3.92	19.88	105.17	-23.03	+19.72	-20.72	302.34	329.06	71.59	19	43.3
2401442.5	3.95	19.69	105.07	-23.12	+20.44	-20.58	302.94	329.10	62.58	20	20.3
2401443.5	3.99	19.50	104.97	-23.20	+21.14	-20.43	303.53	329.13	53.55	20	57.4
2401444.5	4.03	19.31	104.90	-23.28	+21.83	-20.29	304.12	329.16	44.51	21	34.5
2401445.5	4.07	19.12	104.83	-23.36	+22.51	-20.14	304.71	329.18	35.46	22	11.7
2401446.5	4.11	18.93	104.78	-23.44	+23.16	-19.99	305.30	329.20	26.39	22	49.0
2401447.5	4.15	18.74	104.75	-23.51	+23.80	-19.83	305.89	329.21	17.31	23	26.3
2401448.5	4.20	18.54	104.73	-23.58	+24.42	-19.68	306.48	329.22	8.21	..	..
2401449.5	4.24	18.35	104.72	-23.65	+25.03	-19.52	307.06	329.22	359.10	0	03.7
2401450.5	4.29	18.16	104.73	-23.72	+25.62	-19.36	307.65	329.22	349.97	0	41.2

PHYSICAL EPHEMERIS OF MARS, 1864

Julian Day	Light-time	Diameter	$A_s + 180^\circ$	D_s	$A_s - A_s$	D_s	L_s	Position Angle of Axis	Central Meridian	Time of Transit of Zero Meridian
	m	"	°	°	°	°	°	°	°	h m
2402175.5	4.85	16.06	175.22	- 1.56	-23.61	-12.37	329.23	328.73	156.02	13 56.9
2402176.5	4.82	16.16	175.14	- 1.65	-23.01	-12.17	329.78	328.69	147.00	14 33.9
2402177.5	4.79	16.26	175.04	- 1.75	-22.40	-11.96	330.33	328.63	137.99	15 10.8
2402178.5	4.76	16.36	174.94	- 1.86	-21.77	-11.76	330.88	328.57	129.00	15 47.7
2402179.5	4.73	16.46	174.82	- 1.97	-21.13	-11.56	331.42	328.51	120.02	16 24.5
2402180.5	4.70	16.55	174.68	- 2.09	-20.49	-11.35	331.97	328.43	111.05	17 01.2
2402181.5	4.68	16.64	174.54	- 2.22	-19.83	-11.14	332.51	328.36	102.09	17 37.9
2402182.5	4.65	16.73	174.38	- 2.35	-19.16	-10.94	333.06	328.28	93.14	18 14.6
2402183.5	4.63	16.81	174.21	- 2.49	-18.48	-10.73	333.60	328.19	84.21	18 51.2
2402184.5	4.61	16.89	174.03	- 2.64	-17.78	-10.52	334.14	328.09	75.29	19 27.7
2402185.5	4.59	16.97	173.84	- 2.79	-17.08	-10.32	334.68	328.00	66.38	20 04.2
2402186.5	4.57	17.04	173.63	- 2.95	-16.37	-10.11	335.22	327.90	57.48	20 40.7
2402187.5	4.55	17.11	173.42	- 3.11	-15.65	- 9.90	335.76	327.79	48.59	21 17.1
2402188.5	4.53	17.17	173.19	- 3.28	-14.92	- 9.69	336.30	327.68	39.72	21 53.5
2402189.5	4.52	17.23	172.95	- 3.46	-14.18	- 9.48	336.84	327.56	30.85	22 29.8
2402190.5	4.50	17.29	172.71	- 3.63	-13.44	- 9.27	337.38	327.45	21.99	23 06.1
2402191.5	4.49	17.34	172.45	- 3.82	-12.68	- 9.06	337.91	327.32	13.14	23 42.4
2402192.5	4.48	17.38	172.18	- 4.00	-11.92	- 8.85	338.44	327.20	4.30	.. ..
2402193.5	4.47	17.42	171.91	- 4.19	-11.15	- 8.64	338.98	327.07	355.47	0 18.6
2402194.5	4.46	17.45	171.63	- 4.39	-10.37	- 8.43	339.51	326.94	346.65	0 54.7
2402195.5	4.45	17.48	171.34	- 4.59	- 9.59	- 8.22	340.04	326.81	337.83	1 30.9
2402196.5	4.45	17.50	171.04	- 4.79	- 8.80	- 8.01	340.57	326.68	329.02	2 07.0
2402197.5	4.44	17.52	170.74	- 4.99	- 8.00	- 7.80	341.10	326.54	320.22	2 43.1
2402198.5	4.44	17.53	170.43	- 5.20	- 7.21	- 7.58	341.63	326.41	311.42	3 19.2
2402199.5	4.44	17.53	170.11	- 5.40	- 6.40	- 7.37	342.16	326.27	302.63	3 55.2
2402200.5	4.44	17.52	169.79	- 5.61	- 5.60	- 7.16	342.69	326.13	293.84	4 31.3
2402201.5	4.44	17.51	169.47	- 5.82	- 4.79	- 6.95	343.21	326.00	285.05	5 07.3
2402202.5	4.45	17.50	169.15	- 6.03	- 3.98	- 6.73	343.74	325.86	276.27	5 43.3
2402203.5	4.45	17.48	168.82	- 6.24	- 3.17	- 6.52	344.26	325.73	267.49	6 19.3
2402204.5	4.46	17.45	168.49	- 6.44	- 2.36	- 6.31	344.79	325.59	258.71	6 55.3
2402205.5	4.47	17.41	168.16	- 6.65	- 1.55	- 6.10	345.31	325.46	249.92	7 31.3
2402206.5	4.48	17.37	167.83	- 6.86	- 0.74	- 5.88	345.83	325.33	241.14	8 07.3
2402207.5	4.49	17.32	167.50	- 7.06	+ 0.06	- 5.67	346.35	325.20	232.36	8 43.3
2402208.5	4.51	17.27	167.18	- 7.26	+ 0.86	- 5.46	346.87	325.08	223.57	9 19.4
2402209.5	4.52	17.20	166.85	- 7.46	+ 1.66	- 5.25	347.39	324.95	214.79	9 55.4
2402210.5	4.54	17.14	166.53	- 7.65	+ 2.46	- 5.03	347.91	324.83	205.99	10 31.5
2402211.5	4.56	17.07	166.22	- 7.84	+ 3.25	- 4.82	348.43	324.71	197.20	11 07.5
2402212.5	4.58	16.99	165.91	- 8.03	+ 4.03	- 4.61	348.94	324.60	188.40	11 43.6
2402213.5	4.61	16.90	165.60	- 8.22	+ 4.81	- 4.39	349.46	324.49	179.59	12 19.8
2402214.5	4.63	16.82	165.30	- 8.39	+ 5.58	- 4.18	349.97	324.38	170.78	12 55.9
2402215.5	4.66	16.72	165.01	- 8.57	+ 6.34	- 3.97	350.49	324.28	161.95	13 32.1
2402216.5	4.68	16.62	164.72	- 8.74	+ 7.10	- 3.76	351.00	324.18	153.13	14 08.3
2402217.5	4.71	16.52	164.44	- 8.90	+ 7.84	- 3.54	351.51	324.08	144.29	14 44.6
2402218.5	4.74	16.42	164.17	- 9.06	+ 8.58	- 3.33	352.02	323.99	135.45	15 20.9
2402219.5	4.77	16.31	163.91	- 9.21	+ 9.31	- 3.12	352.53	323.90	126.59	15 57.2
2402220.5	4.81	16.19	163.65	- 9.36	+10.02	- 2.91	353.04	323.82	117.73	16 33.6
2402221.5	4.84	16.07	163.41	- 9.50	+10.73	- 2.70	353.55	323.74	108.86	17 10.0
2402222.5	4.88	15.95	163.18	- 9.63	+11.43	- 2.48	354.06	323.66	99.97	17 46.5
2402223.5	4.92	15.83	162.95	- 9.76	+12.11	- 2.27	354.57	323.59	91.08	18 23.0
2402224.5	4.96	15.70	162.74	- 9.88	+12.78	- 2.06	355.07	323.53	82.17	18 59.5
2402225.5	5.00	15.58	162.54	-10.00	+13.45	- 1.85	355.58	323.46	73.26	19 36.1
2402226.5	5.04	15.45	162.35	-10.11	+14.10	- 1.64	356.08	323.40	64.33	20 12.8
2402227.5	5.08	15.31	162.17	-10.21	+14.73	- 1.43	356.59	323.35	55.39	20 49.5
2402228.5	5.13	15.18	162.00	-10.30	+15.36	- 1.22	357.09	323.30	46.44	21 26.3
2402229.5	5.17	15.04	161.84	-10.39	+15.97	- 1.01	357.59	323.25	37.48	22 03.1
2402230.5	5.22	14.91	161.70	-10.47	+16.57	- 0.80	358.09	323.21	28.50	22 39.9
2402231.5	5.27	14.77	161.56	-10.55	+17.16	- 0.59	358.60	323.17	19.52	23 16.9
2402232.5	5.32	14.63	161.44	-10.62	+17.73	- 0.38	359.09	323.13	10.52	23 53.8
2402233.5	5.37	14.49	161.34	-10.68	+18.30	- 0.17	359.59	323.10	1.50	.. ..
2402234.5	5.43	14.35	161.24	-10.73	+18.84	+ 0.04	0.09	323.07	352.48	0 30.9
2402235.5	5.48	14.21	161.16	-10.78	+19.38	+ 0.25	0.59	323.05	343.44	1 07.9

PHYSICAL EPHEMERIS OF MARS, 1866-1867

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Julian Day	Light- time m	Diameter "	A_s+180° °	D_R °	A_s-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2402945.5	5.94	13.11	214.24	+13.22	-23.46	+ 4.93	11.84	351.57	303.54	3 51.6
2402946.5	5.90	13.20	214.14	+13.13	-22.92	+ 5.13	12.32	351.50	294.54	4 28.5
2402947.5	5.86	13.29	214.03	+13.04	-22.37	+ 5.32	12.80	351.42	285.55	5 05.4
2402948.5	5.82	13.38	213.90	+12.95	-21.81	+ 5.52	13.28	351.33	276.58	5 42.2
2402949.5	5.78	13.47	213.77	+12.84	-21.23	+ 5.72	13.76	351.24	267.62	6 18.9
2402950.5	5.74	13.56	213.62	+12.74	-20.64	+ 5.91	14.23	351.14	258.67	6 55.6
2402951.5	5.71	13.64	213.45	+12.63	-20.04	+ 6.10	14.71	351.02	249.74	7 32.3
2402952.5	5.67	13.72	213.27	+12.51	-19.43	+ 6.30	15.19	350.90	240.81	8 08.8
2402953.5	5.64	13.80	213.08	+12.39	-18.80	+ 6.49	15.66	350.77	231.90	8 45.4
2402954.5	5.61	13.88	212.88	+12.27	-18.16	+ 6.68	16.14	350.63	223.01	9 21.8
2402955.5	5.58	13.96	212.67	+12.14	-17.51	+ 6.88	16.61	350.49	214.12	9 58.3
2402956.5	5.55	14.03	212.44	+12.01	-16.85	+ 7.07	17.08	350.33	205.25	10 34.6
2402957.5	5.52	14.10	212.20	+11.87	-16.17	+ 7.26	17.56	350.17	196.38	11 11.0
2402958.5	5.49	14.17	211.95	+11.73	-15.49	+ 7.45	18.03	350.00	187.53	11 47.2
2402959.5	5.47	14.24	211.69	+11.58	-14.79	+ 7.64	18.50	349.82	178.69	12 23.5
2402960.5	5.44	14.30	211.42	+11.43	-14.08	+ 7.82	18.97	349.64	169.86	12 59.7
2402961.5	5.42	14.36	211.14	+11.28	-13.37	+ 8.01	19.44	349.45	161.04	13 35.8
2402962.5	5.40	14.41	210.85	+11.13	-12.64	+ 8.20	19.91	349.25	152.23	14 11.9
2402963.5	5.38	14.46	210.55	+10.97	-11.90	+ 8.39	20.38	349.04	143.43	14 48.0
2402964.5	5.37	14.51	210.24	+10.81	-11.16	+ 8.57	20.85	348.83	134.63	15 24.0
2402965.5	5.35	14.55	209.92	+10.64	-10.40	+ 8.76	21.32	348.61	125.85	16 00.0
2402966.5	5.34	14.58	209.59	+10.48	- 9.64	+ 8.94	21.79	348.39	117.07	16 36.0
2402967.5	5.33	14.62	209.26	+10.31	- 8.88	+ 9.12	22.25	348.17	108.29	17 11.9
2402968.5	5.32	14.65	208.92	+10.14	- 8.10	+ 9.31	22.72	347.94	99.53	17 47.9
2402969.5	5.31	14.67	208.57	+ 9.97	- 7.32	+ 9.49	23.18	347.70	90.77	18 23.8
2402970.5	5.30	14.69	208.22	+ 9.80	- 6.53	+ 9.67	23.65	347.46	82.01	18 59.7
2402971.5	5.30	14.70	207.87	+ 9.62	- 5.75	+ 9.85	24.11	347.22	73.26	19 35.5
2402972.5	5.29	14.71	207.51	+ 9.45	- 4.95	+10.03	24.58	346.98	64.51	20 11.4
2402973.5	5.29	14.71	207.14	+ 9.28	- 4.16	+10.21	25.04	346.73	55.77	20 47.2
2402974.5	5.29	14.71	206.78	+ 9.10	- 3.36	+10.39	25.51	346.49	47.02	21 23.1
2402975.5	5.30	14.70	206.42	+ 8.93	- 2.56	+10.57	25.97	346.24	38.28	21 58.9
2402976.5	5.30	14.69	206.05	+ 8.76	- 1.76	+10.74	26.43	345.99	29.54	22 34.8
2402977.5	5.31	14.67	205.68	+ 8.59	- 0.96	+10.92	26.89	345.75	20.79	23 10.6
2402978.5	5.31	14.65	205.32	+ 8.42	- 0.16	+11.09	27.35	345.50	12.05	23 46.5
2402979.5	5.32	14.62	204.95	+ 8.25	+ 0.64	+11.27	27.81	345.26	3.30	.. ..
2402980.5	5.34	14.59	204.59	+ 8.09	+ 1.44	+11.44	28.27	345.02	354.55	0 22.3
2402981.5	5.35	14.55	204.23	+ 7.93	+ 2.23	+11.61	28.73	344.78	345.80	0 58.2
2402982.5	5.37	14.51	203.88	+ 7.77	+ 3.02	+11.79	29.19	344.54	337.04	1 34.1
2402983.5	5.38	14.46	203.53	+ 7.61	+ 3.81	+11.96	29.65	344.31	328.28	2 10.0
2402984.5	5.40	14.41	203.18	+ 7.46	+ 4.59	+12.13	30.11	344.08	319.51	2 46.0
2402985.5	5.42	14.35	202.85	+ 7.31	+ 5.36	+12.30	30.57	343.85	310.74	3 22.0
2402986.5	5.45	14.29	202.51	+ 7.16	+ 6.13	+12.46	31.02	343.63	301.96	3 58.0
2402987.5	5.47	14.23	202.18	+ 7.02	+ 6.89	+12.63	31.48	343.41	293.17	4 34.0
2402988.5	5.50	14.16	201.87	+ 6.89	+ 7.65	+12.80	31.94	343.20	284.38	5 10.1
2402989.5	5.52	14.09	201.55	+ 6.75	+ 8.39	+12.96	32.39	343.00	275.57	5 46.2
2402990.5	5.55	14.01	201.25	+ 6.63	+ 9.13	+13.13	32.85	342.80	266.76	6 22.3
2402991.5	5.59	13.94	200.95	+ 6.51	+ 9.86	+13.29	33.30	342.61	257.94	6 58.5
2402992.5	5.62	13.85	200.67	+ 6.39	+10.59	+13.46	33.76	342.42	249.11	7 34.7
2402993.5	5.65	13.77	200.39	+ 6.28	+11.30	+13.62	34.21	342.24	240.27	8 11.0
2402994.5	5.69	13.68	200.13	+ 6.17	+12.00	+13.78	34.67	342.07	231.42	8 47.3
2402995.5	5.73	13.59	199.87	+ 6.07	+12.70	+13.94	35.12	341.90	222.56	9 23.6
2402996.5	5.77	13.50	199.62	+ 5.98	+13.38	+14.10	35.57	341.74	213.69	10 00.0
2402997.5	5.81	13.40	199.39	+ 5.89	+14.05	+14.26	36.02	341.59	204.81	10 36.5
2402998.5	5.85	13.31	199.16	+ 5.81	+14.71	+14.42	36.48	341.45	195.91	11 13.0
2402999.5	5.89	13.21	198.95	+ 5.73	+15.36	+14.57	36.93	341.31	187.01	11 49.5
2403000.5	5.94	13.11	198.75	+ 5.66	+16.00	+14.73	37.38	341.18	178.09	12 26.1
2403001.5	5.99	13.01	198.56	+ 5.59	+16.63	+14.88	37.83	341.06	169.16	13 02.8
2403002.5	6.03	12.90	198.38	+ 5.54	+17.25	+15.04	38.28	340.95	160.22	13 39.5
2403003.5	6.08	12.80	198.21	+ 5.48	+17.85	+15.19	38.73	340.85	151.27	14 16.3
2403004.5	6.13	12.69	198.06	+ 5.44	+18.45	+15.34	39.18	340.75	142.30	14 53.1
2403005.5	6.18	12.59	197.91	+ 5.40	+19.03	+15.49	39.63	340.66	133.32	15 29.9

Julian Day	Light- time m	Diameter "	$A_E + 180^\circ$ °	D_E °	$A_S - A_E$ °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian h m
2403710.5	6.51	11.96	249.41	+21.23	-24.49	+18.04	47.68	13.68	140.59	15 00.1
2403711.5	6.46	12.05	249.29	+21.18	-23.92	+18.17	48.12	13.61	131.61	15 36.9
2403712.5	6.41	12.15	249.15	+21.13	-23.34	+18.30	48.56	13.54	122.65	16 13.6
2403713.5	6.36	12.24	249.00	+21.07	-22.75	+18.43	49.01	13.45	113.70	16 50.3
2403714.5	6.31	12.33	248.84	+21.02	-22.14	+18.55	49.45	13.36	104.77	17 26.9
2403715.5	6.27	12.42	248.66	+20.96	-21.51	+18.68	49.89	13.26	95.85	18 03.4
2403716.5	6.22	12.51	248.47	+20.90	-20.87	+18.81	50.33	13.15	86.94	18 39.9
2403717.5	6.18	12.59	248.27	+20.84	-20.22	+18.93	50.78	13.04	78.05	19 16.3
2403718.5	6.14	12.68	248.05	+20.78	-19.56	+19.05	51.22	12.91	69.17	19 52.7
2403719.5	6.10	12.76	247.82	+20.71	-18.87	+19.18	51.66	12.78	60.30	20 29.0
2403720.5	6.06	12.84	247.57	+20.65	-18.18	+19.30	52.10	12.64	51.45	21 05.3
2403721.5	6.03	12.92	247.32	+20.58	-17.47	+19.42	52.54	12.49	42.60	21 41.5
2403722.5	5.99	13.00	247.05	+20.52	-16.75	+19.53	52.98	12.34	33.77	22 17.7
2403723.5	5.96	13.07	246.77	+20.45	-16.02	+19.65	53.42	12.18	24.96	22 53.8
2403724.5	5.92	13.14	246.47	+20.38	-15.28	+19.77	53.86	12.01	16.15	23 29.8
2403725.5	5.89	13.21	246.17	+20.30	-14.52	+19.88	54.30	11.83	7.35	.. ..
2403726.5	5.86	13.28	245.85	+20.23	-13.75	+20.00	54.74	11.64	358.57	0 05.9
2403727.5	5.83	13.34	245.52	+20.16	-12.97	+20.11	55.18	11.45	349.80	0 41.8
2403728.5	5.81	13.40	245.19	+20.08	-12.18	+20.22	55.62	11.25	341.03	1 17.8
2403729.5	5.78	13.46	244.84	+20.01	-11.38	+20.33	56.06	11.05	332.28	1 53.7
2403730.5	5.76	13.51	244.48	+19.93	-10.57	+20.44	56.50	10.84	323.53	2 29.5
2403731.5	5.74	13.56	244.12	+19.85	- 9.75	+20.55	56.94	10.62	314.79	3 05.3
2403732.5	5.72	13.61	243.75	+19.78	- 8.92	+20.65	57.38	10.40	306.06	3 41.1
2403733.5	5.70	13.65	243.37	+19.70	- 8.09	+20.76	57.82	10.18	297.34	4 16.9
2403734.5	5.69	13.68	242.98	+19.62	- 7.25	+20.86	58.25	9.95	288.62	4 52.6
2403735.5	5.68	13.72	242.59	+19.54	- 6.40	+20.97	58.69	9.71	279.91	5 28.3
2403736.5	5.66	13.75	242.19	+19.46	- 5.54	+21.07	59.13	9.47	271.20	6 04.0
2403737.5	5.65	13.77	241.79	+19.38	- 4.68	+21.17	59.57	9.23	262.50	6 39.7
2403738.5	5.65	13.79	241.38	+19.30	- 3.82	+21.27	60.01	8.99	253.80	7 15.3
2403739.5	5.64	13.80	240.97	+19.21	- 2.95	+21.36	60.45	8.74	245.10	7 51.0
2403740.5	5.63	13.81	240.56	+19.13	- 2.08	+21.46	60.88	8.49	236.40	8 26.6
2403741.5	5.63	13.82	240.15	+19.06	- 1.21	+21.56	61.32	8.24	227.71	9 02.3
2403742.5	5.63	13.82	239.73	+18.98	- 0.34	+21.65	61.76	7.98	219.02	9 37.9
2403743.5	5.63	13.82	239.32	+18.90	+ 0.54	+21.74	62.20	7.73	210.32	10 13.5
2403744.5	5.64	13.81	238.91	+18.82	+ 1.41	+21.83	62.63	7.48	201.62	10 49.2
2403745.5	5.64	13.80	238.50	+18.74	+ 2.28	+21.92	63.07	7.23	192.92	11 24.9
2403746.5	5.65	13.78	238.09	+18.67	+ 3.15	+22.01	63.51	6.98	184.22	12 00.5
2403747.5	5.66	13.76	237.69	+18.59	+ 4.01	+22.10	63.95	6.73	175.51	12 36.2
2403748.5	5.67	13.73	237.29	+18.52	+ 4.88	+22.19	64.38	6.48	166.80	13 12.0
2403749.5	5.68	13.70	236.89	+18.45	+ 5.73	+22.27	64.82	6.23	158.09	13 47.7
2403750.5	5.70	13.66	236.51	+18.38	+ 6.59	+22.36	65.26	5.99	149.36	14 23.5
2403751.5	5.71	13.63	236.12	+18.31	+ 7.43	+22.44	65.69	5.75	140.63	14 59.3
2403752.5	5.73	13.58	235.75	+18.25	+ 8.27	+22.52	66.13	5.52	131.90	15 35.1
2403753.5	5.75	13.54	235.38	+18.19	+ 9.10	+22.60	66.57	5.29	123.15	16 11.0
2403754.5	5.77	13.48	235.02	+18.13	+ 9.93	+22.68	67.00	5.06	114.40	16 46.9
2403755.5	5.80	13.43	234.67	+18.07	+10.75	+22.75	67.44	4.84	105.64	17 22.9
2403756.5	5.82	13.37	234.33	+18.01	+11.56	+22.83	67.88	4.62	96.86	17 58.9
2403757.5	5.85	13.31	233.99	+17.96	+12.36	+22.90	68.31	4.41	88.08	18 34.9
2403758.5	5.88	13.25	233.67	+17.91	+13.15	+22.97	68.75	4.21	79.29	19 11.0
2403759.5	5.91	13.18	233.36	+17.87	+13.93	+23.05	69.19	4.01	70.49	19 47.1
2403760.5	5.94	13.11	233.05	+17.82	+14.70	+23.12	69.62	3.82	61.67	20 23.3
2403761.5	5.97	13.04	232.76	+17.78	+15.46	+23.18	70.06	3.63	52.85	20 59.5
2403762.5	6.01	12.96	232.48	+17.75	+16.21	+23.25	70.50	3.46	44.01	21 35.8
2403763.5	6.04	12.88	232.22	+17.71	+16.95	+23.32	70.93	3.28	35.16	22 12.1
2403764.5	6.08	12.81	231.96	+17.68	+17.67	+23.38	71.37	3.12	26.30	22 48.5
2403765.5	6.12	12.72	231.72	+17.66	+18.39	+23.44	71.81	2.97	17.43	23 25.0
2403766.5	6.16	12.64	231.48	+17.64	+19.09	+23.51	72.24	2.82	8.54	.. ..
2403767.5	6.20	12.56	231.27	+17.62	+19.78	+23.57	72.68	2.68	359.64	0 01.5
2403768.5	6.24	12.47	231.06	+17.60	+20.46	+23.62	73.12	2.55	350.73	0 38.0
2403769.5	6.29	12.38	230.87	+17.59	+21.12	+23.68	73.55	2.42	341.80	1 14.6
2403770.5	6.33	12.29	230.69	+17.58	+21.78	+23.74	73.99	2.31	332.87	1 51.3

PHYSICAL EPHEMERIS OF MARS, 1871

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Julian Day	Light- time m	Diameter "	A_R+180° °	D_R °	A_S-A_R °	D_S °	L_S °	Position Angle of Axis °	Central Meridian °	Time of Transit of Zero Meridian	
										h	m
2404475.5	6.48	12.02	285.31	+21.65	-24.25	+24.49	81.87	30.98	337.04	1	34.2
2404476.5	6.42	12.12	285.19	+21.65	-23.65	+24.52	82.31	30.94	328.06	2	11.0
2404477.5	6.37	12.23	285.06	+21.65	-23.04	+24.55	82.75	30.89	319.10	2	47.8
2404478.5	6.31	12.33	284.92	+21.65	-22.41	+24.57	83.19	30.84	310.15	3	24.5
2404479.5	6.26	12.43	284.76	+21.66	-21.77	+24.60	83.63	30.78	301.21	4	01.1
2404480.5	6.21	12.53	284.59	+21.66	-21.12	+24.62	84.07	30.71	292.29	4	37.7
2404481.5	6.16	12.63	284.40	+21.67	-20.45	+24.64	84.51	30.64	283.38	5	14.3
2404482.5	6.12	12.73	284.20	+21.69	-19.76	+24.66	84.95	30.57	274.48	5	50.7
2404483.5	6.07	12.83	283.99	+21.70	-19.07	+24.67	85.39	30.49	265.60	6	27.2
2404484.5	6.02	12.92	283.76	+21.72	-18.36	+24.69	85.83	30.40	256.73	7	03.5
2404485.5	5.98	13.02	283.52	+21.74	-17.63	+24.70	86.27	30.31	247.87	7	39.8
2404486.5	5.94	13.11	283.27	+21.76	-16.90	+24.72	86.71	30.21	239.02	8	16.1
2404487.5	5.90	13.20	283.01	+21.78	-16.15	+24.73	87.15	30.11	230.19	8	52.3
2404488.5	5.86	13.29	282.73	+21.80	-15.39	+24.74	87.59	30.00	221.37	9	28.4
2404489.5	5.82	13.37	282.44	+21.83	-14.61	+24.74	88.03	29.89	212.56	10	04.5
2404490.5	5.78	13.46	282.14	+21.86	-13.82	+24.75	88.47	29.77	203.76	10	40.6
2404491.5	5.75	13.54	281.83	+21.89	-13.03	+24.75	88.91	29.65	194.97	11	16.6
2404492.5	5.72	13.61	281.50	+21.92	-12.22	+24.76	89.35	29.52	186.20	11	52.6
2404493.5	5.69	13.69	281.17	+21.95	-11.40	+24.76	89.79	29.38	177.43	12	28.5
2404494.5	5.66	13.76	280.82	+21.99	-10.57	+24.76	90.23	29.25	168.67	13	04.4
2404495.5	5.63	13.83	280.47	+22.02	- 9.73	+24.76	90.68	29.10	159.93	13	40.2
2404496.5	5.60	13.89	280.11	+22.06	- 8.88	+24.75	91.12	28.95	151.19	14	16.0
2404497.5	5.58	13.95	279.74	+22.10	- 8.02	+24.75	91.56	28.80	142.46	14	51.8
2404498.5	5.56	14.01	279.36	+22.14	- 7.15	+24.74	92.00	28.65	133.73	15	27.5
2404499.5	5.53	14.06	278.97	+22.18	- 6.28	+24.73	92.45	28.48	125.02	16	03.2
2404500.5	5.52	14.11	278.58	+22.22	- 5.39	+24.73	92.89	28.32	116.31	16	38.9
2404501.5	5.50	14.16	278.18	+22.26	- 4.51	+24.71	93.33	28.15	107.60	17	14.6
2404502.5	5.48	14.20	277.77	+22.31	- 3.61	+24.70	93.78	27.98	98.90	17	50.2
2404503.5	5.47	14.23	277.36	+22.35	- 2.71	+24.69	94.22	27.80	90.21	18	25.9
2404504.5	5.46	14.27	276.95	+22.40	- 1.81	+24.67	94.67	27.63	81.52	19	01.5
2404505.5	5.45	14.29	276.53	+22.44	- 0.91	+24.65	95.11	27.45	72.83	19	37.1
2404506.5	5.44	14.31	276.11	+22.49	0.00	+24.63	95.56	27.26	64.14	20	12.7
2404507.5	5.43	14.33	275.69	+22.53	+ 0.91	+24.61	96.00	27.08	55.46	20	48.3
2404508.5	5.43	14.34	275.27	+22.58	+ 1.82	+24.59	96.45	26.89	46.77	21	23.9
2404509.5	5.42	14.35	274.85	+22.62	+ 2.73	+24.57	96.89	26.71	38.08	21	59.5
2404510.5	5.42	14.35	274.43	+22.67	+ 3.64	+24.54	97.34	26.52	29.40	22	35.1
2404511.5	5.42	14.35	274.01	+22.72	+ 4.55	+24.52	97.79	26.33	20.71	23	10.8
2404512.5	5.43	14.34	273.60	+22.76	+ 5.46	+24.49	98.23	26.14	12.01	23	46.4
2404513.5	5.43	14.33	273.18	+22.81	+ 6.36	+24.46	98.68	25.96	3.32	..	..
2404514.5	5.44	14.32	272.78	+22.85	+ 7.26	+24.42	99.13	25.77	354.61	0	22.1
2404515.5	5.45	14.30	272.37	+22.90	+ 8.15	+24.39	99.58	25.58	345.91	0	57.8
2404516.5	5.46	14.27	271.98	+22.95	+ 9.04	+24.36	100.02	25.40	337.19	1	33.5
2404517.5	5.47	14.24	271.59	+22.99	+ 9.92	+24.32	100.47	25.22	328.47	2	09.2
2404518.5	5.48	14.21	271.20	+23.04	+10.79	+24.28	100.92	25.04	319.74	2	45.0
2404519.5	5.49	14.17	270.83	+23.08	+11.66	+24.24	101.37	24.86	311.01	3	20.9
2404520.5	5.51	14.13	270.46	+23.13	+12.52	+24.20	101.82	24.69	302.26	3	56.7
2404521.5	5.53	14.08	270.11	+23.17	+13.37	+24.16	102.27	24.52	293.51	4	32.6
2404522.5	5.55	14.03	269.76	+23.21	+14.20	+24.11	102.72	24.35	284.74	5	08.6
2404523.5	5.57	13.98	269.42	+23.26	+15.03	+24.07	103.17	24.19	275.97	5	44.5
2404524.5	5.59	13.92	269.09	+23.30	+15.85	+24.02	103.62	24.03	267.18	6	20.6
2404525.5	5.62	13.86	268.78	+23.35	+16.66	+23.97	104.08	23.88	258.38	6	56.7
2404526.5	5.64	13.80	268.47	+23.39	+17.46	+23.92	104.53	23.73	249.57	7	32.8
2404527.5	5.67	13.73	268.18	+23.43	+18.24	+23.86	104.98	23.58	240.75	8	09.0
2404528.5	5.70	13.67	267.90	+23.48	+19.01	+23.81	105.43	23.45	231.92	8	45.2
2404529.5	5.73	13.59	267.63	+23.52	+19.77	+23.75	105.89	23.31	223.07	9	21.5
2404530.5	5.76	13.52	267.37	+23.56	+20.52	+23.70	106.34	23.19	214.21	9	57.9
2404531.5	5.79	13.44	267.13	+23.61	+21.26	+23.64	106.79	23.07	205.34	10	34.3
2404532.5	5.82	13.37	266.90	+23.65	+21.98	+23.58	107.25	22.95	196.45	11	10.8
2404533.5	5.86	13.29	266.68	+23.69	+22.68	+23.51	107.70	22.84	187.55	11	47.3
2404534.5	5.89	13.21	266.48	+23.73	+23.38	+23.45	108.16	22.74	178.64	12	23.9
2404535.5	5.93	13.12	266.29	+23.78	+24.06	+23.38	108.62	22.65	169.71	13	00.6